

## 3000 Operations

Refer to Section 3000 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM)

### 3100 Operations Section Organization

Refer to Section 3002 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM)

#### 3110 Organization Options

Refer to Section 3002.01

### 3200 Recovery and Protection

#### 3210 Protection (Also see Section 9800)

##### 3210.1 Containment and Protection Options

This subsection is to assist first responders to an oil spill in protecting the most sensitive and valuable biological communities. It is assumed that those first responders are unfamiliar with the relative sensitivities of the biological communities at risk from the spilled oil. This document is intended to serve as a guide only until the Unified Command System is staffed with appropriate biological expertise to make the response recommendations to the Federal On-Scene Coordinator and the State's On-Scene Commander. This appendix is meant to be used as a reference by the staff of the Incident Commander and not as a controlling document.

##### 3210.11 References

Nautical charts prepared by the National Oceanic and Atmospheric Administration provide a larger scale helpful in planning for a response to a catastrophic spill involving large areas of the coastline or San Francisco Bay and as navigational aids for responders.

A study of California's coastal inlets, "Coastal Inlet Protection Strategies for Oil Spill Response," was prepared for the Marine Spill Response Corporation (MSRC) and the California Department of Fish and Game's (CDFG) Office of Oil Spill Prevention and Response (OSPR) and contains detailed maps of the 172 coastal inlets and possible response strategies. These are discussed in Section 4600 and incorporated into the Area Contingency Plan by reference. Copies are available from Research Planning, Inc. of Columbia, South Carolina, or copies may be made from the OSPR originals.

Maps of the sensitivity of the shoreline to oiling, the Environmental Sensitivity Index (ESI), are useful in response activities and are incorporated into the Area Contingency Plan by reference. Section 9800 shows a listing of the shoreline types and gives a brief description of each. ESI maps are currently available for the entire California Coast and the Channel Islands. These maps are available through Research Planning, Inc. or photocopies of the maps may be made from the OSPR originals. These maps will be in a geographic information system (GIS) and also have natural resource and some socioeconomic data available. These are also available for a fee from Research Planning, Inc. or available for copying at OSPR.

### **3210.12 Environmental Sensitivity**

While the basic philosophy is to protect the largest number of organisms most sensitive and vulnerable to oiling, it must be noted that **all** biological communities and organisms are sensitive to the effects of oiling. The different categories simply identify the relative degree of sensitivity. Even shorelines on which specific environmentally sensitive sites have not been identified have resources sensitive to oiling.

The environmental sensitivity of a site is determined by considering the following criteria:

1. Does the site provide habitat for species either listed or candidates for listing as rare, threatened, or endangered under State and/or Federal law?
2. Does the site provide habitat that is of extraordinary biological productivity?
3. Does the site provide habitat that is of extraordinary biological diversity?
4. Does the site provide habitat for organisms that are extremely vulnerable and sensitive to oiling and that would be difficult to restore if contaminated by oil?

### **3210.13 Prioritization**

Using these criteria, the following relative priorities for environmentally sensitive areas are established:

#### **Category A - First Priority for Protection**

Wetlands, estuaries, and lagoons with emergent vegetation (includes all Environmental Sensitivity Index (ESI) 10 shorelines (see Section 9800) Sheltered tidal flats (includes all ESI 9 shorelines)

Habitats of species that are listed or candidates for listing as rare, threatened, or endangered under State and Federal laws.

Sites of significant concentrations of vulnerable and sensitive species, e.g. pinniped pupping and nursery areas during the pupping season.

#### **Category B - Second Priority for Protection**

Major pinniped haul out areas during non-pupping seasons

Moderate concentrations of vulnerable and sensitive species

Other low energy shorelines not otherwise included by one of the criteria above, including rip-rap in sheltered areas (ESI 6b), exposed tidal flats (ESI 7), sheltered rocky shores (ESI 8A) and sheltered man-made structures (ESI 8B)

#### **Category C - Third Priority for Protection**

Higher energy shorelines that are not otherwise included by one of the criteria above including gravel beaches (ESI 6A), mixed sand and gravel beaches (ESI 5), coarse-grained sand to granule beaches (ESI 4), fine to medium-grained sand beaches (ESI 3), exposed wave-cut platforms (ESI 2), exposed seawalls and piers (ESI 1B) and exposed rocky cliffs (ESI 1A)

### **3210.14 Mapping**

Mapping is complicated by the mobile nature of many of the species considered during an oil spill response. This circumstance highlights the need to immediately involve experts with current knowledge of resources and their distribution, and the need to regard this annex only as a guide for first responders without this information.

Resources and sites for priority in protection are mapped on the series of maps included. Circles are placed on the maps to identify the sites of concern, their relative priority for protection and the seasonality of that concern, if any. A letter on the circle indicates the area's priority for protection, with "A" indicating the first priority for protection and "B" the second priority as discussed above. If the sites priority for protection varies seasonally, the circle will be subdivided, and each subdivision will contain a letter indicating the appropriate protection priority for that season. The months of the year are represented on the face of the circle, with the month of January occurring between the 12 o'clock and 1 o'clock positions, February occurring between the 1 o'clock and the 2 o'clock positions, and so on.

A four-digit number near the circle cross references to an adjoining site summary sheet where information regarding the resources at the location highlighted can be found. The site summary sheets provide specific information about the natural resource that caused the site to be of concern.

### **3210.15 Relative Risk at the Time of a Spill**

For the purpose of this task, "risk" is defined as "the likelihood of spilled oil reaching the vicinity of the resources." During an actual oil spill event, the relative likelihood of a resource coming into contact with the oil is a result of the proximity of the spill to the natural resource and the wind, weather, current, and tides at the time of the spill.

Consequently, responders to an oil spill should not assume that resources equidistant from the source of a spill are at equal risk from the oil. At a minimum, first responders to a spill in the marine environment must be able to forecast the speed and direction of the spilled oil. This requires responders to have immediate access to real time information about the local weather, tides, and currents to make the best prediction possible about the movement of the oil away from the scene of a spill.

Access to computer software programs that predict the movement of the oil in response to the conditions existing at the time of the spill are the preferred method of determining which resources are most likely to be reached by the oil and therefore at most "risk." Responders should begin use of computer predictions for periodic intervals over the short-term future as soon as possible in the response. For example, predictions would be useful for every four to eight hour increment for the first 36 to 48 hour, with the exact time and interval keyed to the maximum and minimum tides and any significant changes predicted in the wind direction and/or speed and weather. Normally, computer projections are most available to responders at the time of a spill through the National Oceanic and Atmospheric Administration's Scientific Support Coordinator.

### **3210.16 Deployment of Response Resources**

The deployment of response resources must be consistent with the facility's or vessel's oil spill contingency plan, or in the even a spill without a responsible party, the State's oil spill contingency plan and the appropriate Area Contingency Plan unless unique local circumstances for the spill at hand dictates a variance that would be in the interest of providing more effective protection for natural resources at risk. First responders must use the information and procedures contained in the appropriate plans and implement the plans as fully as possible as is consistent with good judgment and with the conditions existing at the time of the response.

These plans all utilize the Unified Command System. The Unified Command may utilize the proposed response strategies for the environmentally sensitive sites. However, the Unified Command and the responders should remain flexible and be receptive to additional information when instituting the booming plan or other countermeasures. The proposed strategies are proposals. The proposals should only be considered as "predetermined strategies" when they have been deployed during an exercise (or actual response) and their effectiveness is evaluated as satisfactory. It is envisioned that it will take several years to fully test all of the response strategies.

**Remember that the predetermined protection strategy field tests are narrow in focus and do not cover all given scenarios and conditions. Even after field tests are complete, all predetermined strategies should continue to be a guideline and starting point. The Unified Command has ultimate responsibility to ensure that protection strategies used during a response are the best possible for the given situation and conditions.**

The decision makers in the Unified Command System are the Federal On-Scene Coordinator, the State On-Scene Commander, the Responsible Party and a local government representative or their designee.

### **3210.17 Prioritization of Environmental and Economic Resources**

Consistent with State and Federal law, the highest priority in oil spill response is the protection of human health and safety. Consistent with State law, protection of environmental resources is the second highest priority. Protection of economic resources is the third highest priority.

There may be significant situations where both the economic and environmental significance of a site or area would be considered in deciding appropriate response strategies. This consideration would only be necessary if response resources were limited. These considerations must be made at the time of the spill by the Unified Command based on the information available and conditions at the time of the spill.

## **ESI Classifications**

ESI classifications used for shorelines in the State of California

<u>ESI Classification</u>	<u>Description</u>
1A	Exposed Rocky Cliffs
1B	Exposed Sea Walls and Piers
2	Exposed Wave-Cut Platforms
3	Fine/Medium-Grained Sandy Beaches
4	Coarse-Grained Sand/Gravel Beaches
5	Mixed Sand and Gravel Beaches
6A	Gravel Beaches
6B	Rip Rap
7	Exposed Tidal Flats
8A	Sheltered Rocky Shores
8B	Sheltered Man-Made Structures
9	Sheltered Tidal Flats
10	Marshes

### **3210.18 Containment Strategies**

Before spilled oil can be effectively recovered, the spreading of the oil must be controlled and the oil contained in an area accessible to oil recovery devices. In this section various oil containment strategies are discussed. Generally, spilled oil is contained using oil containment boom. Typical boom has a flotation section that provides a barrier on and above the water surface and a skirt section that provides a barrier below the water surface. The physical dimensions of the boom to be used for a particular spill will be dependent on local conditions. In the open ocean it may be necessary to use a boom that is several feet tall. In a protected marsh, a boom that is only a few inches tall may be appropriate.

There are limitations on the effectiveness of any boom. Oil will be lost if the conditions are such that there is splash over from breaking waves. Oil will also be carried under the boom if it is deployed in such a way that currents cause the oil to impact the boom with a velocity perpendicular to the boom of greater than 0.7 knots. Once a boom has been deployed, it may be necessary to reposition it due to changing tides and currents. It is desirable to have personnel available to readjust the boom as required. In all cases of boom deployment, consideration must be given to protecting the safety of those involved in the activity.

### **3210.19 Open Water Containment**

Oil spilled on open water is normally contained using boom. The boom will be deployed using vessels that will tow the boom around the perimeter of the oil spill. The type of boom to be deployed will depend on local conditions, including sea state, tides, currents and wind. To be most effective, booming on open water must be done as soon as possible after a spill.

#### **3210.110 Protective Booming**

The goal of most oil containment and recovery strategies is to collect the spilled oil from the water and prevent it from reaching sensitive resources. Frequently, however, this is not possible and sensitive resources are oiled in spite of response efforts, especially during large oil spills. Often the goal will be to minimize environmental injury using a variety of booming, containment and recovery techniques. The following are techniques that can be implemented by the Booming Branch of the UCS' Operations section for containing spilled oil on water or as a means to direct it away from sensitive natural resources or cultural amenities. Shoreline cleanup and treatment methods are discussed in more detail later in this Appendix.

#### **3210.111 Exclusionary Booming**

This type of booming is performed prior to the advance of the oil and is used to prevent or exclude oil from entering a harbor inlet, slough, marsh or estuary. Either skirted or sorbent boom can be used for this type of booming. Factors that need to be considered are: type and size of boom, natural outflow of the body of water, wind, tide and currents or a combination of both.

These factors can be predetermined by establishment of a priority system, training and local knowledge of underwater topography, weather conditions and boom anchoring capabilities. It is important to remember that the boom needs to be tended and monitored as weather and tidal conditions can change.

### **3210.112 Diversionary Booming**

Oil movement for this type of booming strategy should be reduced to under 0.7 knots. This can be accomplished by angling the boom in relation to the current's direction, reducing the velocity of the floating oil in relation to the boom. Diversionary or deflection booms can be set up in series along a waterway to increase their effectiveness. As stated before, the boom(s) needs to be tended and monitored as weather and tidal conditions can change.

### **3210.113 Containment Booming**

Containment booming is used primarily to prevent spreading and to concentrate the oil so it can be skimmed or vacuumed. Factors that need to be considered are: type and size of boom required for weather, winds, tides and currents in the vicinity of potential spill areas; the type of deployment vessel needed; the amount of boom needed for effective containment and available skimming capabilities. Fixed or natural anchor points should be selected. These factors can be predetermined by emphasizing worst-case spill scenarios and using local knowledge of weather and sea conditions.

### **3210.114 Sorbent Booming**

This type of booming is useful when the amount of oil is minimal, when tides and currents are light, or when shorelines require protection. Heavier oil can be recovered using adsorbents (oil "sticks" to material) and lighter fuels generally are recovered using absorbents (sausage, sweep, or diapers). Sorbent booming can also be used as a backup for other types of booming to recover product that may have entrained past the primary barrier.

Factors that need to be considered are: wind and wave action; type of sorbent required, i.e., rocky or sandy shoreline, marsh area, etc.; and type and viscosity of product to be recovered.

### **3210.115 Berms and Dams**

Coastal shores are barriers to spreading oil. Temporary berms, dikes and dams can also serve as effective barriers against oil contamination of sensitive natural resources and economic amenities. Berms, dikes and dams are simply another form of booming and are subject to the same environmental stresses. The appropriate protection technique for a particular shore depends on several factors:

- water body type (open water, bay, tidal channel, inlet)
- water current velocity
- water depth
- wave height
- shore type (sand, gravel, boulder)

Generally, sediment berms, dikes and dams will most often be used to protect small coastal inlets or perhaps tidal channels serving wetlands and marshes when these channels are accessible. The object of berms, dikes and dams is to keep oil outside an inlet because there are often abundant natural resources and economically significant areas that use the sheltered waters of bays and estuaries within. Occasionally, dikes and dams have been used across a channel to contain the oil within a portion of marsh in order to prevent widespread contamination of other resources.

Dikes and dams are not practical when currents are great, waters are deep and waves are large. Also, beaches with abundant sand are generally the most suitable for building dikes and dams. Berms can be built above the active beach face to prevent oil contamination of high beach during spring tides. Alternative strategies should be prepared and the necessary supplies and equipment in place should a berm, dike or dam fail.

### **3220 On-Water Recovery**

#### **Offshore/Open Water Operations**

Oil removal/recovery in open water is accomplished through the use of skimming devices once the oil has been contained. Skimmers can be freestanding in which the skimmer is a separate piece of equipment which pumps the oil-water mixture from the contained surface into tanks on a vessel. These skimmers are usually driven by hydraulic units on board a vessel. Self-propelled skimmers have a skimmer as an integral part of the vessel. The skimming vessel positions itself at the head of a concentrated or contained pool of oil and recovers the oil into tanks on board the vessel. There is also a type of skimmer in which the weir or collection zone of the skimmer is an integral part of the boom, which is in contact with the oil. The pumping and oil collection is done on the vessel, which is close to the weir skimmer.

"Vessels of opportunity", such as fishing vessels, may be used to deploy or tow boom and, depending on their size, be equipped with skimming equipment. They need to have adequate deck space and lifting cranes to carry the necessary equipment. The Coast Guard's Vessel of Opportunity Skimming System (VOSS) could be deployed on a variety of vessels

To be most effective, oil spill recovery equipment must be directed to the location of the thickest oil accumulation. Observers on vessels at water level are unable to see a vast area and are unable to recognize the most optimum skimming locations. Skimming activities are best directed by trained observers aloft in helicopters. One observer may be able to direct several skimming units to optimum skimming locations. During hours of darkness or poor visibility, tracking devices that emit radiolocation signals can be placed in the spilled oil to trace the oil movement. Remote sensing systems have been developed which can track oil movement even in darkness and poor visibility. The sensor is mounted in an aircraft that overflies the spill area. The sensor systems include Side Looking Airborne Radar (SLAR), infrared and radiometric.

#### **Nearshore/Shallow Water**

Oil recovery techniques and equipment are different in nearshore/shallow water locations than open water. Shallow draft vessels and smaller boom and skimmers are used in these situations. These vessels can maneuver into tight places behind and under wharfs or in sloughs and can actually skim next to shore in many nearshore locations.

Strategies for nearshore cleanup can differ depending on the depth of the water and the location. Nearshore operations, within a bay or inlet, will also require shallow draft vessels, workboats and skimmers. However, the vessels may only be operable at high tide. At or near low tide, the operation may evolve into a shoreline cleanup operation. Any boom towing boats or skimmers must be able to withstand going aground without sustaining major damage. Coastal shallow water or nearshore strategies will differ in certain respects. In addition to the need for small, shallow draft vessels, specialized vessels such as kelp cutters and harvesters may also be needed. California's rocky coast can make nearshore operations difficult and even dangerous during high surf and winter conditions. Once again, the safety of personnel involved in these operations is the Unified Command's paramount concern.

#### **Coastal Inlets**

The coastal inlets of California are the focal points for designing strategies to protect the vital resources of the State's estuaries and bays. It is through these inlets that oil spilled on open

ocean waters could reach inland resources. A publication titled Coastal Inlet Protection Strategies for Oil-Spill Response was prepared jointly by Miles O. Hayes and Todd M. Montello. This document provides a synopsis of the relevant characteristics of the coastal inlets in the State, as well as a discussion of potential protection strategies for each inlet. The discussion of each inlet alludes to the range of conditions that might occur at the inlet; however, the proposed protection strategies are based on the best professional judgment of what would work under average wave and tide conditions.

### **3220.1 Recovery Options**

#### **3220.11 Skimmers**

Weir Skimmers: These skimmers recover oil by aligning a barrier just below the surface of the water and having oil floating on the water surface pass over the weir into a recovery box or into a pump. Weir skimmers are not the most efficient recovery systems because a large amount of water is usually collected along with the recovered oil.

Vortex Skimmers: In a vortex skimmer, a turbine-like fan, mounted below the surface, is used to create a current, which draws in oil floating on the water. It is then pumped to a collection tank. The device is mounted on a vessel or floats at the water surface.

Sorption/Oleophilic Skimmers: This type of skimmer uses materials that will retain a high percentage of oil minimizing the amount of water collected with the oil. The skimming devices can be belts, ropes, brushes or discs that come in contact with the oil. The device then will either wring or scrape the oil from the material into a collection point for removal to a storage tank.

Suction Skimmers: These devices operate in conjunction with a pump that draws liquid into the skimming device. The skimmer head generally floats on the water with an oil/water mixture being drawn into the skimmer. A typical application would include a skim head used with a truck mounted vacuum system.

#### **3220.12 Dredges**

Suction dredges are rarely used to recover oil or oiled sediments from the bottom of a water body because oil usually does not sink or, if it does, the amount is small and not recoverable. There are exceptions, however. Whether an oil sinks or floats depends primarily on the specific gravity of the oil and the temperature and salinity of the water. Oil may also sink once it is adsorbed to exposed sediment like sand or gravel, which is subsequently mobilized and redeposited in deeper water.

If dredging is considered as a recovery technique, there must be provision for containment and storage of large quantities of water recovered along with the oil or oiled sediment. A large quantity of oil-contaminated water can present significant storage, transport, and disposal problems, which must be resolved before the activity is begun. These problems can be diminished if oil/water separation is provided, and decanting of water back to the containment area is allowed by state and federal agencies.

Dredging can be coupled with low-volume, low pressure washing of the bottom to direct the sunken oil down gradient to some collection point where the accumulated oil can be recovered by a dredge. Currents and flow patterns may cause the sunken oil to naturally collect in low spots that can serve this same purpose. The use of a hopper barge's inverted draghead as a weir skimmer was fairly successful in Prince William Sound and could be employed in calm seas.



### **3220.13 Vacuum Trucks**

Vacuum trucks are frequently essential equipment for cleanup of oil spills. A hose is extended from the truck to the oil collection or containment site to pick up the oil. If the oil is floating on water, the suction hose can be connected to a "duck bill" nozzle that has a long horizontal slot to allow the oil to be picked up while minimizing the amount of water collected. A weir-type skimmer can also be connected to the suction hose to suck the thin layer of oil from the surface and minimize the amount of water collected at the same time. Both methods require a full-time attendant to adjust the equipment and clear debris.

Vacuum trucks work best when the oil layer is thick. If there is only a thin layer of oil on the water, much more water will be collected than oil. Recovery of a large quantity of water can make a vacuum truck operation very inefficient because the tank will quickly fill with water and little oil. Transport and disposal costs increase as a result. The operation can be made more efficient if the oil/water mix recovered is allowed to separate in the tank and the water decanted back to the containment area. Decanting must be approved by state and federal agencies.

### **3220.2 Storage**

To expedite removal of spilled oil, refined products, and contaminated materials from marine waters during an emergency-response, containment activities (to include temporary waste storage) may be conducted at appropriate on-shore locations [22 CCR 66270.1(c)3]. The transportation of oil and contaminated material to temporary waste storage sites during an emergency response is exempt from transportation and manifesting requirements, per the draft MOU between OSPR and DTSC (these requirements are also exempted per 22 CCR 66263.30 and/or 66263.43 for transportation-related emergency responses.

During an immediate response, all oil and/or oily materials may be recovered, transported, or transferred to temporary waste storage sites and are exempt from any hazardous waste generator and facility permit requirements for a period of 30 days, per the draft MOU between OSPR and DTSC. Additional 30-day extensions may be granted by DTSC, under appropriate circumstances.

Temporary storage sites can be an area or facility approved by the IC or Unified Command for characterizing and/or temporarily storing recovered oil and/or oily materials used, collected, or recovered during an oil spill response. Such an area may include, but is not limited to, permitted or interim status hazardous waste storage facilities, other non-permitted facilities, vessels, barges, tanks, vacuum trucks, barrels, containers, storage piles, or other appropriate containment methods and locations that may be used to hold recovered oil and/or oily materials. Temporary storage sites need not be owned, operated, or leased by the RP. Temporary storage sites that are on-shore should be established at locations that are convenient to the recovery operations for the temporary storage of recovered petroleum products, and contaminated materials and debris. Siting of the temporary storage site, however, must be done with the concurrence of the following:

#### **FOSC**

- DTSC [The DTSC duty officer can be contacted at one of the following phone numbers: Region 1 (Sacramento) @ 916-255-3564; Region 2 (Oakland) @ 510-540-3739; Region 3 (Glendale) @ 818-551-2830; and Region 4 (Long Beach) @ 310-590-4968.]
- California Coastal Commission/Bay Area Conservation and Development Commission Joint Oil Spill Program (BCDC/CCC) [for further information on obtaining temporary and/or emergency permits within the coastal zone, contact the CCC/BCDC at (415) 557-3683]
- Regional Water Quality Control Board (RWQCB), and
- Local health, fire and emergency services departments.

If a Unified Command is established, OSPR will facilitate the contact of the state and local government agencies through the Liaison Officer.

### 3230 Shoreside Recovery

The most obvious differences between shorelines along the California coast are due to their geomorphology. These geomorphologic differences are caused by their exposure to different quantities of water and wind driven forces of shoreline energy (specifically waves and currents) and the shoreline type (substrate, grain size, tidal elevation, origin). The geomorphology and the degree of exposure to waves and currents combine to influence the plants and animals that inhabit the intertidal and shallow sub tidal areas of the shoreline and the natural persistence of stranded oil. It is these same factors that provide the criteria to determine the appropriate shoreline cleanup techniques.

These concepts were the basis for development of the Environmental Sensitivity Index (ESI) by the Research Planning Institute (RPI), which ranks shorelines according to their sensitivity to oiling and shoreline cleanup activity. The ESI provides a useful first step in the design of contingency plans because it enables the ready identification of priority areas for protection from oiling and determination of appropriate shoreline cleanup methods during response activities.

Summarized, the ESI ranges from 1 (least sensitive to oil) to 10 (most sensitive to oil). Detailed descriptions of the ESI shoreline types and likely oil impacts can be found in the National Oceanic & Atmospheric Administration (NOAA) Shoreline Assessment Manual at: [http://response.restoration.noaa.gov/shor\\_aid/shor\\_aid.html](http://response.restoration.noaa.gov/shor_aid/shor_aid.html)

Shoreline types are ranked as follows:

RANK	SHORE	(NOAA ESI Map Shore Type)
1	Exposed Rocky Shores	(1a)
2	Exposed Solid Man-made Structures	(1b)
3	Exposed Wave-cut Platforms	(2a)
4	Sand Beaches	(3 & 4)
5	Mixed Sand and Gravel Beaches	(5)
6	Gravel Beaches	(6a)
7	Riprap	(6b)
8	Exposed Tidal Flats	(7)
9	Sheltered Rocky Shores	(8a)
10	Sheltered Solid Man-made Structures	(8b)
11	Sheltered Tidal Flats	(9a)
12	Salt to Brackish Marshes	(10a)

Under certain conditions it will be appropriate to take actions to remediate the effects of stranded oil on shorelines. Other conditions may dictate that no actions should be taken. The primary goal of the implementation of any shoreline countermeasure is the removal of oil from the environment with no further injury or destruction to that environment. A list of the 21 different countermeasures is provided. These 21 countermeasures, including natural recovery, have been evaluated for the appropriateness of their use on five different major categories of petroleum products (very light, light, medium, heavy, non-floating) stranded on ten shoreline types. The results of these evaluations are presented on five matrices attached at the end of this section. These matrices are intended to be used as a planning guide by the Shoreside Recovery Group of the Operations Section.

The countermeasures listed may not be the best for use under all possible circumstances, and multiple countermeasures may need to be used on the same shoreline. Selection of specific countermeasures for use during a spill response will be based on the properties of the stranded oil, the degree of contamination, the shoreline type, and the presence of sensitive natural

resources. The Federal On-Scene Coordinator or the State On-Scene Commander has the authority to select or approve specific countermeasures for use during an oil spill response.

## Shoreline Cleanup Options

The following section lists and describes those techniques, which may be required for use during a shoreline cleanup. Methods and equipment currently in use for these shoreline treatment methods are described in more detail in the Shoreline Assessment Manual. These methods, when used according to the guidelines in this document, may be used on most sites as part of the UC-directed response. It should be noted that methods noted with an (\*) will require special consideration and authorization by the natural resource trustee prior to commencement of work. The trustee agency(s) for fish and wildlife resources will make the final recommendations to the Unified Command on which specific method(s) to employ on a case-by-case basis. Regardless of this decision, contingency plans should provide for an array of identified methods to be used. Currently approved methods are:

- Natural Recovery
- Barriers/Berms
- Manual Oil Removal/Cleaning
- Mechanical Oil Removal
- Sorbents
- Vacuum
- Debris Removal
- Sediment Reworking/Tilling \*
- Vegetation Cutting/Removal
- Flooding (deluge)
- Low Pressure, Ambient Water Flush (<50 psi)
- High Pressure, Ambient Water Flush (50-100 psi)
- Low Pressure, Hot Water (<50 psi)
- High Pressure, Hot Water (50-100 psi)
- Steam Cleaning
- Sand Blasting
- Solidifiers \*
- Shoreline Cleaning Agents \*
- Nutrient Enrichments \*
- Natural Microbe Seeding \*
- In-situ Burning \*

A description of each shoreline cleanup method is discussed below:

### **3230.11 Natural Recovery**

**Objective:** No attempt is made to remove any stranded oil, when there is no effective method for cleanup or to minimize impact to the environment. Oil is left to degrade naturally.

**Description:** No action is taken, although monitoring of contaminated areas is required.

**Applicable Habitat Types:** All habitat types.

**When to Use:** When natural removal rates are fast (e.g., gasoline evaporation or high energy coastlines), when the degree of oiling is light, access is severely restricted or dangerous to cleanup crews, or when cleanup actions will do more harm than natural removal.

**Biological Constraints:** This method may be inappropriate for areas used by high numbers of mobile animals (birds, marine mammals) or endangered species.

**Environmental Effects:** Same as from the oil alone.

**Waste Generation:** None.

### **3230.12 Barriers/Berms**

**Objective:** To prevent entry of oil into a sensitive area or to divert oil to a collection area.

**Description:** A physical barrier other than a boom is placed across an area to prevent oil from passing through into sensitive habitats. Barriers can consist of earthen berms or filter fences. When it is necessary for water to pass because of water volume, underflow or overflow dams are used.

**When to Use:** When the oil threatens sensitive habitats, and other barriers are not feasible. To protect sensitive areas when cleaning adjacent shorelines.

**Applicable Habitat Types:** At the mouths of creeks or streams to prevent oil from entering from offshore, or to prevent oil from being released from the creek into offshore waters. Also, on beaches where a high berm can be built above the high-tide line to prevent oil from over-washing the beach and entering a sensitive back-beach habitat (e.g. lagoon).

**Environmental Effects:** May disrupt or contaminate sediments and adjacent vegetation. The natural beach or shore profile should be restored (may take weeks to months on gravel beaches).

**Biological Constraints:** Responders must minimize disturbance to sensitive areas, such as shorebird nesting sites on beaches. Placement of dams and filter fences could cause excessive physical disruptions to the site, particularly in wetlands.

**Waste Generation:** Sediment barriers will become contaminated on the oil side and filter fence materials will have to be disposed of as oily wastes.

### **3230.13 Manual Oil Removal/Cleaning**

**Objective:** To remove oil with hand tools and manual labor.

**Description:** Removal of surface oil with hands, rakes, shovels, buckets, scrappers, sorbents, pitchforks, etc., and placing in containers. No mechanized equipment is used. Includes underwater recovery of submerged oil by divers with hand tools, for example.

**Applicable Habitat Types:** Can be used on all habitat types.

**When to Use:** Light to moderate oiling conditions for stranded oil or heavy oils that have formed semi-solid to solid masses that can be picked up manually.

**Biological Constraints:** Foot traffic over sensitive areas (wetlands, tidal pools, etc.) should be restricted or prevented. There may be periods when shoreline access should be avoided, such as during bird nesting.

**Environmental Effects:** Minimal, if surface disturbance by crew movement and waste generation is controlled.

**Waste Generation:** May generate significant quantities of oil mixed with sediment, which must be properly disposed of or treated. Decontamination of hand tools may produce oily wastewater that must be treated properly. Worker personal protective gear is usually disposed of daily or decontaminated and the resulting oily wastewater treated properly.

### **3230.14 Mechanical Oil Removal**

**Objective:** To remove oil from shorelines and bottom sediments with mechanical equipment.

**Description:** Oil and oiled sediments are collected and removed using mechanical equipment such as backhoes, graders, bulldozers, dredges, draglines, etc. Requires systems for temporary storage, transportation, and final treatment and disposal.

**Applicable Habitat Types:** On land, wherever surface sediments are both amenable to and accessible to heavy equipment. For submerged oil, used in sheltered areas where oil accumulates. On water, used on viscous to solid oil.

**When to Use:** When large amounts of oiled materials must be removed. Care should be taken to remove sediments only to the depth of oil penetration, which can be difficult when using heavy equipment. Should be used carefully where excessive sediment removal may cause erosion.

**Biological Constraints:** Heavy equipment may be restricted in sensitive habitats (e.g., wetlands, soft substrate) or areas containing endangered species. Will need special permission to use in areas with known cultural resources. Dredging in sea grass beds or coral reef habitats may be prohibited. The noise generated by the mechanical equipment may also be a constraint.

**Environmental Effects:** The equipment is heavy, with many support personnel required. May be detrimental if excessive sediments are removed without replacement. All organisms in the sediments will be affected, although the need to remove the oil may make this response method the best overall alternative. Re-suspension of exposed oil and fine-grained oily sediments can affect adjacent bodies of water.

**Waste Generation:** Can generate significant quantities of contaminated sediment that must be cleaned or land filled. The amount of waste generated by this cleanup option should be given careful consideration by response planners when reviewing potential environmental impacts of the oily wastes, debris, and residues.

### **3230.15 Sorbents**

**Objective:** To remove surface oil by absorption onto oleophilic (oil-attracting) material placed in water or at the waterline.

**Description:** Sorbent material is placed *on the floating oil or water surface* to allow it to absorb oil, or alternatively, the material can be used to wipe or dab stranded oil. Forms include sausage boom, pads, rolls, sweeps, snares, and loose granules or particles. These products can be either synthetic or natural substances. Efficacy depends on the capacity of the particular sorbent, energy available for lifting oil off the substrate, and stickiness of the oil. Recovery of all sorbent material is mandatory. Loose particulate Sorbents must be contained in a mesh or other material.

**Applicable Habitat Types:** Can be used on any habitat or environment type.

**When to Use:** When oil is free-floating close to shore or stranded on shore. The oil must be able to be released from the substrate and absorbed by the sorbent. Often used as a secondary treatment method after gross oil removal and in sensitive areas where access is restricted. Selection of sorbent varies by oil type; heavy oils only coat surfaces, requiring a high surface area to be effective, whereas lighter oils can penetrate sorbent material.

**Biological Constraints:** Access for deploying and retrieving sorbents should not be through soft or sensitive habitats or affect wildlife. Sorbent use should be monitored to prevent overuse and generation of large volumes of waste. Sorbents should not be used in a fashion that would endanger or trap wildlife. Sorbents left in place too long can break apart and present an ingestion hazard to wildlife.

**Environmental Effects:** Physical disturbance of habitat during deployment and retrieval. Improperly deployed or tended sorbent material can crush or smother sensitive substrates.

**Waste Generation:** Sorbents must eventually be collected for proper disposal so care should be taken to select and use sorbents properly, and prevent generation of large amounts of lightly oiled sorbents. Recycling should be emphasized rather than disposal.

### **3230.16 Vacuum**

**Objective:** To remove oil pooled on a shoreline substrate or sub tidal sediments.

**Description:** A vacuum unit is attached via a flexible hose to a suction head that recovers free oil. The equipment can range from small, portable units that fill individual 55-gallon drums to large super suckers that are truck or vessel mounted and can generate enough suction to lift large rocks. Removal rates from substrates can be extremely slow.

**Applicable Habitat Types:** Any accessible habitat type. May be mounted on barges for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites.

**When to Use:** When oil is stranded on the substrate, concentrated in trenches or trapped in vegetation.

Usually requires shoreline access points.

**Biological Constraints:** Special restrictions should be established for areas where foot traffic and equipment operation may be damaging, such as soft substrates. Operations in wetlands need to be very closely monitored, with a site-specific list of restrictions developed to prevent damage to vegetation.

**Environmental Effects:** Minimal, if foot and vehicular traffic is controlled and minimal substrate is damaged or removed.

**Waste Generation:** Collected oil and or oil/water mix will need to be stored temporarily prior to recycling or disposal. Oil may be recyclable; if not, it will require proper disposal. Large amounts of water are often recovered, requiring separation and treatment.

### **3230.17 Debris Removal**

**Objective:** To remove contaminated debris from the shoreline or water surface.

**Description:** Manual or mechanical removal of debris from the shore or water surface. Can include cutting and removal of oiled logs.

**Applicable Habitat Types:** Can be used on any habitat or environment type where access is safe.

**When to Use:** When driftwood and debris are heavily contaminated and provide a potential source of chronic oil release. When it may create aesthetic problems, be a source of contamination for other resources in the area, cause clogging problems in the skimmer, or create safety problems for responders. Used in areas of debris accumulation on beaches prior to oiling to minimize the amount of oiled debris to be handled.

**Biological Constraints:** Foot traffic over sensitive areas (wetlands, spawning grounds) needs to be restricted. May be periods when access should be restricted (spawning periods, influx of large numbers of migratory water birds).

**Environmental Effects:** Physical disruption of substrate, especially when mechanized equipment must be deployed to recover a large quantity of debris.

**Waste Generation:** Will generate contaminated debris (volume depends on what, and how much, is collected, e.g., logs, brush). Unless there is an approved hazardous waste incinerator that will take oily debris, burning will seldom be allowed especially on-site burning. However, this option should still be explored, especially for remote locations, with the appropriate state or federal agencies that must give approvals for burning.

### **3230.18 Sediment Reworking/Tilling**

**Objective:** To enhance the rate of degradation, by breaking up oily sediments and surface oil deposits, increasing the surface area, and mixing deep subsurface oil layers to the surface.

**Description:** The oiled sediments are roto-tilled, disked, or otherwise mixed using mechanical equipment or manual tools. Along beaches, oiled sediments may also be pushed to the water's edge (surf washing) to enhance natural cleanup by wave activity. The process may be aided with high-volume flushing of gravel.

**Applicable Habitat Types:** On any sedimentary substrate that can support mechanical equipment or foot traffic.

**When to Use:** On sand to gravel beaches with subsurface oil, where sediment removal is not feasible (due to erosion or disposal problems). On sand beaches, where the sediment is stained or lightly oiled, appropriate where oil is stranded above normal high waterline.

**Biological Constraints:** Avoid use on shores near sensitive wildlife habitat, such as fish-spawning areas or bird-nesting or concentration areas because of the potential for release of oil and oiled sediments into adjacent bodies of water. Should not be used in shellfish beds.

**Environmental Effects:** Due to the mixing of oil into sediments, this method could further expose organisms that live below the original layer of oil. Repeated mixing over time could delay reestablishing organisms. Refloated oil from treated sites could contaminate adjacent areas.

**Waste Generation:** None.

### **3230.19 Vegetation Cutting/Removal**

**Objective:** To remove portions of oiled vegetation or oil trapped in vegetation to prevent oiling of wildlife or secondary oil releases.

**Description:** Oiled vegetation is cut with weed-whackers, blades, etc., and picked or raked up and bagged for disposal.

**Applicable Habitat Types:** Habitats composed of vegetation such as wetlands, sea grass beds, and kelp beds.

**When to Use:** When the risk of oiled vegetation contaminating wildlife is greater than the value of the vegetation that is to be cut, and there is no less-destructive method that removes or reduces the risk to acceptable levels.

**Biological Constraints:** Operations must be strictly monitored to minimize the degree of root destruction and mixing of oil deeper into the sediments. Access in bird-nesting areas should be restricted during nesting seasons. Cutting only the oiled portions of the plants and leaving roots and as much of the stem as possible minimizes impact to plants.

**Environmental Effects:** Vegetation removal will destroy habitat for many animals. Cut areas will have reduced plant growth, and in some instances, plants may be killed. Cutting at the base of the plant stem may allow oil to penetrate into the substrate, causing subsurface contamination. Along exposed sections of shoreline, the vegetation may not recover, resulting in erosion and habitat loss. Trampled areas will recover much more slowly.

**Waste Generation:** Cut portions of oiled plants must be collected and disposed.

### **3230.110 Flooding**

**Objective:** To wash oil stranded on the land surface to the water's edge for collection. **Description:** A perforated header pipe or hose is placed above the oiled shore or bank. Ambient-temperature water is pumped through the header pipe at low pressures and flows down slope to the water. On porous sediments, water flows through the substrate, pushing loose oil ahead of it, or floating oil to the water's surface and transporting the oil down the slope for pickup. On saturated, fine-grained sediments, the technique becomes more of a flushing of the surface.

**Applicable Habitat Types:** All shoreline types where the equipment can be effectively deployed. This is non-effective in steep intertidal areas.

**When to Use:** In heavily oiled areas when the oil is still fluid and adheres loosely to the substrate, and where oil has penetrated into gravel sediments. This method is frequently used with other washing techniques (low- or high-pressure, cold-to-hot-water flushing).

**Biological Constraints:** Special care should be taken to recover oil where nearshore habitats contain rich biological communities. Not appropriate for muddy substrates.

**Environmental Effects:** Habitat may be physically disturbed by foot traffic during operations and smothered by sediments washed down the slope. Oiled sediment may be transported to shallow, nearshore areas, contaminating them and burying benthic organisms.

**Waste Generation:** Depends on the effectiveness of the collection method.

### **3230.111 Low-Pressure, Ambient-Water Flushing**

**Objective:** To remove fluid oil that has adhered to the substrate or man-made structures, pooled on the surface, or become trapped in vegetation.

**Description:** Ambient-temperature water is sprayed at low pressures (<10 psi), usually from hand-held hoses, to lift oil from the substrate and direct it to the water's edge for recovery by skimmers, vacuum, or sorbents. Can be used with a flooding system to prevent released oil from re-adhering to the substrate down-stream of the treatment area.

**Applicable Habitat Types:** On substrates, riprap, and solid man-made structures, where the oil is still fluid. In wetlands and along vegetated banks where oil is trapped in vegetation.

**When to Use:** Where fluid oil is stranded onshore or floating on shallow intertidal areas.

**Biological Constraints:** May need to restrict use so that the oil/water effluent does not drain across sensitive, intertidal habitats and mobilized sediments do not affect rich subtidal communities. Use from boats will reduce the need for foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.

**Environmental Effects:** If containment methods are not sufficient, oil and oiled sediments may be flushed into offshore areas. Some trampling of substrate and attached biota will occur.



**Waste Generation:** Depends on the effectiveness of the collection method.

### **3230.112 High-Pressure, Ambient-Water Flushing**

**Objective:** To remove oil that has adhered to hard substrates of man-made structures.

**Description:** Similar to low-pressure flushing except that water pressure is 100-1,000 psi.

High-pressure spray will more effectively remove sticky or viscous oils. If low-water volumes are used, sorbents are placed directly below the treatment area to recover oil.

**Applicable Habitat Types:** On bedrock, man-made structures, and gravel substrates.

**When to Use:** When low-pressure flushing is not effective at removing adhered oil that must be removed to prevent continued oil release or for aesthetic reasons. When a directed water jet can remove oil from hard-to-reach sites.

**Biological Constraints:** May have to restrict flushing so that the oil does not drain across sensitive habitats. Flushed oil must be recovered to prevent further oiling of adjacent areas. Attached animals and plants in the direct spray zone will be removed.

**Environmental Effects:** May drive oil deeper into the substrate or erode shorelines of fine sediments if water jet is improperly applied. If containment methods are not sufficient, oil and oiled sediments may be flushed into offshore areas. Some trampling of substrate and attached biota will occur.

**Waste Generation:** Depends on the effectiveness of the collection method.

### **3230.113 Low-Pressure, Hot-Water Flushing**

**Objective:** To remove non-fluid oil that has adhered to the substrate or man-made structures, or pooled on the surface.

**Description:** Hot water (90.F up to 170.F) is sprayed with hoses at low pressures (<10 psi) to liquefy and lift oil from the substrate and direct it to the water's edge for recovery by skimmers, vacuums, or sorbents. Used with flooding to prevent released oil from re-adhering to the substrate.

**Applicable Habitat Types:** On bedrock, sand to gravel substrates, and man-made structures.

**When to Use:** Where heavy, but relatively fresh oil is stranded onshore. The oil must be heated above its pour point, so it will flow. This is less effective on sticky oils.

**Biological Constraints:** Avoid wetlands or rich intertidal communities so that hot oil/water effluent does not contact sensitive habitats. Operations from boats will help reduce foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.

**Environmental Effects:** Hot-water contact can kill all attached animals and plants. If containment methods are not sufficient, oil may be flushed into downstream areas. Some trampling of substrate and biota will occur.

**Waste Generation:** Depends on the effectiveness of the collection method.

### **3230.114 High-Pressure, Hot-Water Flushing**

**Objective:** To mobilize weathered and viscous oil strongly adhered to surfaces.

**Description:** Hot water (90 degrees F [30 degrees C] up to 170 degrees F [70 degrees C]) is sprayed with hand-held wands at pressures greater than 100 psi (720 kpa). If used without water flooding, this procedure requires immediate use of vacuum or sorbents to recover the oil/water runoff. When used with a flooding system, the oil is flushed to the water surface for collection by skimmers, vacuum, or sorbents.

**Applicable Habitat Types:** Gravel substrates, bedrock, and man-made structures.

**When to Use:** When oil has weathered to the point that warm water at low pressure no longer effectively removes oil. To remove viscous oil from man-made structures for aesthetic reasons.

**Biological Constraints:** Use should be restricted so that the oil/water effluent does not drain across sensitive habitats (damage can result from exposure to oil, oiled sediments, and hot water). Should not be used directly on attached algae nor rich, inter-tidal areas. Released oil must be recovered to prevent further oiling of adjacent areas.

**Environmental Effects:** All attached animals and plants in the direct spray zone will be removed or killed, even when used properly. Oiled sediment may be transported to shallow nearshore areas, contaminating them and burying benthic organisms.

**Waste Generation:** Depends on the effectiveness of the collection method.

### **3230.115 Steam Cleaning**

**Objective:** To remove heavy residual oil from solid substrates or man-made structures.

**Description:** Steam or very hot water (171 degrees F [77 degrees C] to 212 degrees F [100 degrees C]) is sprayed with hand-held wands at high pressure (2000+ psi [14,400 kpa]). Water volumes are very low compared to flushing methods.

**Applicable Habitat Types:** Man-made structures such as seawalls and riprap.

**When to Use:** When heavy oil residue must be removed for aesthetic reasons, and when hot-water flushing is not effective and no living resources are present.

**Biological Constraints:** Not to be used in areas of soft substrates, vegetation, or high biological abundance directly on, or below, the structure.

**Environmental Effects:** Complete destruction of all organisms in the spray zone. Difficult to recover all released oil.

**Waste Generation:** Depends on the effectiveness of the collection method. Usually sorbents are used, generating significant waste volumes.

### **3230.116 Sand Blasting**

**Objective:** To remove heavy residual oil from solid substrates or man-made structures.

**Description:** Use of sandblasting equipment to remove oil from the substrate. May include recovery of used (oiled) sand in some cases.

**Applicable Habitat Types:** On heavily oiled bedrock, artificial structures such as seawalls and riprap.

**When to Use:** When heavy oil residue must be cleaned for aesthetic reasons, and even steam cleaning is not effective.

**Biological Constraints:** Not to be used in areas of soft substrate, vegetation, or high biological abundance directly below, or adjacent to, the structures.

**Environmental Effects:** Complete destruction of all organisms in the blast zone. Possible smothering of downstream organisms, unrecovered, and used sand will introduce oiled sediments into the adjacent habitat.

**Waste Generation:** Will need to recover and dispose of oiled sand used in blasting.

### **3230.117 Solidifiers**

**Objective:** To change the physical state of spilled oil from a liquid to a solid.

**Description:** Chemical agents (polymers) are applied to oil at rates of 10-45 percent or more, solidifying the oil in minutes to hours. Various broadcast systems, such as leaf blowers, water cannons, or fire suppression systems, can be modified to apply the product over large areas. Can be applied to both floating and stranded oil. Can be placed in booms, pillows, sausages, etc. and used like sorbents, although this type of solidifier application has not been used operationally.

**Applicable Habitat Types:** All water environments, bedrock, sediments, and artificial structures.

**When to Use:** When immobilization of the oil is desired, to prevent refloating from a shoreline, penetration into the substrate, or further spreading. However, the oil may not fully solidify unless the product is well mixed with the oil, and may result in a mix of solid and untreated oil. Generally not used on heavy oil spills, which are already viscous.

**Biological Constraints:** Must be able to recover all treated material.

**Environmental Effects:** Available products are insoluble and have very low aquatic toxicity. Unrecovered solidified oil may have longer impact because of slow weathering rates. Physical disturbance of habitat is likely during application and recovery.

**Waste Generation:** If skimming efficiency is increased, solidifiers may reduce the volume of water collected during oil recovery. Effects on recycling oil treated with solidifiers is unknown. Most solidifier producers state that treated oil can pass leachate tests, allowing disposal in landfills.

### **3230.118 Shoreline Cleaning Agents (Surface Washing Agents)**

**Objective:** To increase the efficiency of oil removal from contaminated substrates.

**Description:** Special formulations are applied to the substrate, as a presoak and/or flushing solution, to soften or lift weathered or heavy oils from the substrate to enhance flushing methods. The intent is to lower the water temperature and pressure required to mobilize the oil from the substrate during flushing. Some agents will disperse the oil as it's washed off the beach, others will not.

**Applicable Habitat Types:** On any habitat where water flooding and flushing procedures are applicable.

**When to Use:** When the oil has weathered to the point where it cannot be removed using ambient water temperatures and low pressures. This approach may be most applicable where flushing effectiveness decreases as the oil weathers.

**Biological Constraints:** When the product does not disperse the oil into the water column, the released oil must be recovered from the water surface. Use may be restricted where suspended sediment concentrations are high, near wetlands, and near sensitive near shore resources.

**Environmental Effects:** The toxicity and effects on dispersability of treated oil vary widely among products. Selection of a product should consider the toxicity of the product.

**Waste Generation:** Because treated oil must be recovered, waste generation is a function of recovery method, which often includes sorbents.

### 3230.119 Nutrient Enrichment (Biostimulation)

**Objective:** To accelerate the rate of oil hydrocarbon degradation due to natural microbial processes using a form of bioremediation that adds nutrients (generally nitrogen and phosphorus) that stimulate microbial growth. If nutrients are a limiting factor (as measured using the interstitial pore water) in an area where shoreline oiling has occurred, water-soluble nutrients can be applied by a spray irrigation system.

**Description:** Nutrients should be applied daily if the impacted area gets completely submerged by tides and waves and if maximum biostimulation is desired. If the impacted area gets submerged only during spring tides, the frequency of nutrient addition will be determined by the intertidal zone water coverage. Using slow-release granular or encapsulated nutrients or oleophilic fertilizer (which adheres to the oil residue on the surface) should require less frequent addition, but time-series monitoring of interstitial pore water nutrient levels is needed to ensure target levels are being maintained, especially throughout the depth of the impacted intertidal zone.

**When to Use:** Any shoreline habitat type where access is allowed and nutrients are deficient.

**Applicable Habitat Types:** On moderate to heavily oiled substrates, after other techniques have been used to remove free product on lightly-oiled shorelines, where other techniques are destructive or ineffective; and where nutrients limit natural attenuation. Most effective on light to medium crude oils and fuel oils (asphaltenes tend to inhibit rapid biodegradation). Less effective where oil residues are thick. Not considered for gasoline spills, which evaporate rapidly.

**Biological Constraints:** Avoid using ammonia-based fertilizers at highly elevated concentrations because un-ionized ammonia is toxic to aquatic life. Nitrate is an equally good nitrogen source, minus the toxicity. Sodium tripolyphosphate is a better phosphorus source than orthophosphates because it is more soluble in seawater. If nutrients are applied properly with adequate monitoring, eutrophication should not be a problem. Only nutrient additives proven to be nontoxic and effective in either the laboratory or the field should be used in the environment. Contact toxicity of oleophilic nutrients may restrict their use as other chemicals in the product could be more toxic to aquatic organisms in the presence of oil.

**Environmental Effects:** Detrimental effects to shoreline from foot or vehicle traffic caused by workers applying nutrients (unless nutrients are sprayed from a vessel or aircraft).

**Waste Generation:** None.

### 3230.120 Natural Microbe Seeding (Bioaugmentation)

**Objective:** To accelerate natural microbial degradation of oil by using a form of bioremediation that adds high numbers of oil-degrading microorganisms.

**Description:** Formulations containing specific hydrocarbon-degrading microbes are added to the oiled area because indigenous hydrocarbon degraders are low in number, or, those that are present cannot degrade the oil effectively. Since microbes require nitrogen and phosphorus to convert hydrocarbons to biomass, formulations containing these oil degraders must also contain adequate nutrients. Research studies conducted with bioengineered organisms or organisms enriched from different environments, grown in the laboratory to high numbers, and applied to an oiled beach to stimulate rapid biodegradation, have failed to prove conclusively that seeding is effective.

Bioaugmentation appears less effective than biostimulation because: 1) hydrocarbon degraders are ubiquitous in nature and, when an oil spill occurs at a given site, the influx of oil will cause an immediate increased response in the hydrocarbon degrading populations; but, 2) if nutrients are in limited supply, the rate of oil biodegradation will be less than optimal; thus, 3) supplying nutrients will enhance the process initiated by the spill, but adding microorganisms will not, because they still lack the necessary nitrogen and phosphorus to support growth.

**Applicable Habitat Types:** There is insufficient information on impact or effectiveness of this method to make a judgment on applicable habitat.

**When to Use:** There is insufficient information on impact or effectiveness of this method to make a judgment on when to use it.

**Biological Constraints:** Avoid using products containing ammonia-based fertilizers at elevated concentrations because un-ionized ammonia is toxic to aquatic life. Nitrate is an equally good a nitrogen source, minus the toxicity. If the product containing nutrients is applied properly with adequate monitoring, eutrophication should not be a problem; but, toxicity tests should be evaluated carefully, as other chemicals in the product could be toxic to aquatic organisms.

**Environmental Effects:** Detrimental physical effects to shoreline from foot or vehicle traffic caused by workers applying bioaugmentation products (unless nutrients are sprayed from a vessel or aircraft).

**Waste Generation:** None.

### **3230.121 IN-SITU BURNING**

**Objective:** To remove oil from the water surface or habitat by burning it in place.

**Description:** Oil floating on the water surface is collected into slicks at least 2-3 mm thick and ignited. The oil can be contained in fire-resistant booms, or by natural barriers such as ice or the shore. On land, oil can be burned when it is on a combustible substrate such as vegetation, logs, and other debris. Oil can be burned from non-flammable substrates using a burn promoter. On sedimentary substrates, it may be necessary to dig trenches for oil to accumulate in pools to a thickness that will sustain burning. Heavy oils are hard to ignite but can sustain a burn. Emulsified oils may not ignite nor sustain a burn when the water content is greater than 30 to 50 percent.

**When to Use:** On most habitats except dry muddy substrates where heat may impact the biological productivity of the habitat. May increase oil penetration into permeable substrates. Use in marshes should be undertaken using special precautions. Not suitable for woody vegetation such as mangroves and hardwood swamps.

**Applicable Habitat Types:** On land, where there is heavy oil in sites neither amenable nor accessible to physical removal and it is important to remove the stranded oil quickly. In wetlands and mud habitats, a water layer will minimize impacts to sediments and roots. Many potential applications for spills in ice. There are many operational and public health limitations.

**Biological Constraints:** The possible effect of smoke on wildlife and populated areas should be evaluated.

**Environmental Effects:** Temperature and air quality effects are likely to be localized and short-lived. Toxicological impact from burn residues has not been evaluated. On-water, burn residues are likely to sink. On land, removal of residues is often necessary for crude and heavy oils. Limited data on burning oiled wetlands indicate recovery of wetland vegetation will depend on season of burn, type of vegetation, and water level in the marsh at time of burn.

**Waste Generation:** Any residues remaining after burning will need to be collected and landfilled, but  
with an efficient burn will be a small fraction of the original oil volume.

## 3230.122 Response Matrices

### Gasoline Products

**Table 44.**

GASOLINE PRODUCTS (Category I): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.

This table should not be used without the accompanying text in the document.

<i>Response Method</i>	<i>Exposed Rocky Shores (1a)</i>	<i>Exposed Solid-Man-made Structures (1b)</i>	<i>Exposed Wave-cut Platforms (2a)</i>	<i>Sand Beaches (3) &amp; (4)</i>	<i>Mixed Sand and Gravel Beaches (5)</i>	<i>Gravel Beaches (6a)</i>	<i>Riprap (6b)</i>	<i>Exposed Tidal Flats (7)</i>	<i>Sheltered Rocky Shores (8a)</i>	<i>Sheltered Solid Man-made Structures (8b)</i>	<i>Salt to Brackish Marshes Sheltered Tidal Flats (9a)</i>	<i>Salt to Brackish Marshes Sheltered Tidal Flats (9a)</i>
<b>Natural Recovery</b>	A	A	A	A	A	A	A	A	A	A	A	A
Barriers/Berms	-	-	-	B	C	-	-	B	-	-	B	B
<b>Manual Oil Removal/Cleaning</b>	-	-	-	D	D	D	-	-	-	-	-	D
Mechanical Oil Removal	-	-	-	D	D	D	-	-	-	-	-	D
<b>Sorbents</b>	-	-	-	-	-	-	-	-	A	-	-	-
Vacuum	-	-	-	-	-	-	-	-	-	-	-	-
<b>Debris Removal</b>	-	-	-	-	-	-	-	-	-	-	-	-
Sediment Reworking/Tilling	-	-	-	D	D	D	-	-	-	-	-	D
<b>Vegetation Cutting/Removal</b>	-	-	-	-	-	-	-	-	-	-	-	D
Flooding (deluge)	-	-	-	A	A	A	A	-	-	-	-	B
<b>Low-pressure, Ambient Water Flushing</b>	-	-	-	B	B	A	A	-	-	-	-	B
High-pressure, Ambient Water Flushing	-	-	-	-	-	-	A	-	-	-	-	-
<b>Low-pressure, Hot Water Flushing</b>	-	-	-	-	-	-	-	-	-	-	-	-
High-pressure, Hot Water Flushing	-	-	-	-	-	-	-	-	-	-	-	-
<b>Steam Cleaning</b>	-	-	-	-	-	-	-	-	-	-	-	-
Sand Blasting	-	-	-	-	-	-	-	-	-	-	-	-
<b>Solidifiers</b>	-	-	-	-	-	-	-	-	-	-	-	-
Shoreline Cleaning Agents	-	-	-	-	-	-	-	-	-	-	-	-
<b>Nutrient Enrichment</b>	-	-	-	-	-	-	-	-	-	-	-	-
Natural Microbe Seeding	-	-	-	-	-	-	-	-	-	-	-	-
<b>In-situ Burning</b>	-	-	-	-	-	-	-	-	-	-	-	-

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

- A = May cause the least adverse habitat impact.
- B = May cause some adverse habitat impact.
- C = May cause significant adverse habitat impact.
- D = May cause the most adverse habitat impact.
- I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
- = Not applicable.

## Diesel-Like Products and Light End Crude Oils

**Table 45.** DIESEL-LIKE PRODUCTS AND LIGHT CRUDE OILS (Category II): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.

This table should not be used without the accompanying text in the document.

<i>Response Method</i>	<i>Exposed Rocky Shores (1a)</i>	<i>Exposed Solid Man-made Structures (1b)</i>	<i>Exposed Wave-cut Platforms (2a)</i>	<i>Sand Beaches (3) &amp; (4)</i>	<i>Mixed Sand and Gravel Beaches (5)</i>	<i>Gravel Beaches (6a)</i>	<i>Riprap (6b)</i>	<i>Exposed Tidal Flats (7)</i>	<i>Sheltered Rocky Shores (8a)</i>	<i>Sheltered Solid Man-made Structures (8b)</i>	<i>Sheltered Tidal Flats (9a)</i>	<i>Salt to Brackish Marshes (10a)</i>
<b>Natural Recovery</b>	A	A	A	B	B	A	A	A	A	A	A	A
Barriers/Berms	—	—	—	B	C	B	—	B	—	—	B	B
<b>Manual Oil Removal/Cleaning</b>	—	—	B	B	C	C	A	C	C	B	D	D
Mechanical Oil Removal	—	—	—	B	C	D	—	D	—	—	—	D
<b>Sorbents</b>	B	B	B	B	A	A	A	A	A	A	A	A
Vacuum	A	—	A	—	—	—	—	C	B	—	C	B
<b>Debris Removal</b>	A	—	A	A	A	A	A	B	A	A	B	B
Sediment Reworking/Tilling	—	—	—	B	B	B	—	—	—	—	—	D
<b>Vegetation Cutting/Removal</b>	—	—	—	C	C	—	—	D	—	—	—	D
Flooding (deluge)	—	—	A	A	A	A	A	A	A	—	B	B
<b>Low-pressure, Ambient Water Flushing</b>	—	—	A	B	A	A	A	B	A	A	C	B
High-pressure, Ambient Water Flushing	—	—	B	—	—	—	A	—	C	B	—	—
<b>Low-pressure, Hot Water Flushing</b>	—	—	D	—	—	—	C	—	—	—	—	—
High-pressure, Hot Water Flushing	—	—	D	—	—	—	C	—	—	—	—	—
<b>Steam Cleaning</b>	—	—	—	—	—	—	—	—	—	—	—	—
Sand Blasting	—	—	—	—	—	—	—	—	—	—	—	—
<b>Solidifiers</b>	—	—	C	—	—	—	B	C	C	—	C	C
Shoreline Cleaning Agents	—	—	—	—	—	—	—	—	—	—	—	—
<b>Nutrient Enrichment</b>	—	—	—	A	A	A	A	I	A	I	I	A
Natural Microbe Seeding	—	—	I	I	I	I	I	I	I	I	I	I
<b>In-situ Burning</b>	—	—	D	—	—	—	—	—	D	—	—	B

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

- A = May cause the least adverse habitat impact.
- B = May cause some adverse habitat impact.
- C = May cause significant adverse habitat impact.
- D = May cause the most adverse habitat impact.
- I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
- = Not applicable.



## Medium-Grade Crude Oils and Intermediate Products

Table 46. MEDIUM GRADE CRUDE OILS AND INTERMEDIATE PRODUCTS (Category III): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.

This table should not be used without the accompanying text in the document.

<i>Response Method</i>	<i>Exposed Rocky Shores (1a)</i>	<i>Exposed Solid Man-made Structures (1b)</i>	<i>Exposed Wave-cut Platforms (2a)</i>	<i>Sand Beaches (3) &amp; (4)</i>	<i>Mixed Sand and Gravel Beaches (5)</i>	<i>Gravel Beaches (6a)</i>	<i>Riprap (6b)</i>	<i>Exposed Tidal Flats (7)</i>	<i>Sheltered Rocky Shores (8a)</i>	<i>Sheltered Solid Man-made Structures (8b)</i>	<i>Sheltered Tidal Flats (9a)</i>	<i>Salt to Brackish Marshes</i>
<b>Natural Recovery</b>	A	A	A	B	B	B	B	A	B	B	B	B
Barriers/Berms	—	—	—	B	C	B	—	B	—	—	B	B
<b>Manual Oil Removal/Cleaning</b>	B	B	B	A	B	B	A	B	B	B	C	C
Mechanical Oil Removal	—	—	—	B	B	C	B	D	—	—	—	D
<b>Sorbents</b>	A	A	A	A	A	A	A	A	B	A	A	A
Vacuum	A	—	A	B	B	B	A	B	B	—	B	B
<b>Debris Removal</b>	A	—	A	A	A	A	A	B	A	A	B	B
Sediment Reworking/Tilling	—	—	—	B	B	B	—	C	—	—	—	D
<b>Vegetation Cutting/Removal</b>	—	—	—	C	C	—	—	D	D	—	D	C
Flooding (deluge)	—	—	A	A	B	B	B	A	A	—	B	B
<b>Low-pressure, Ambient Water Flushing</b>			A	B	A	A	B	B	A	B	C	B
High-pressure, Ambient Water Flushing			B	—	C	B	B	—	B	B	—	—
<b>Low-pressure, Hot Water Flushing</b>			C	C	C	C	C	—	D	C	—	—
High-pressure, Hot Water Flushing			C	—	D	C	C	—	D	C	—	—
<b>Steam Cleaning</b>	D	D	D	—	D	D	D	—	D	D	—	—
Sand Blasting	D	D	D	—	—	—	D	—	D	D	—	—
<b>Solidifiers</b>	—	—	C	B	B	B	B	C	C	—	C	C
Shoreline Cleaning Agents	C	B	C	C	C	B	B	—	B	B	—	B
<b>Nutrient Enrichment</b>	—	—	—	A	A	A	A	I	B	I	I	B
Natural Microbe Seeding	—	—	I	I	I	I	I	I	I	I	I	I
<b>In-situ Burning</b>	—	—	D	C	C	C	D	—	C	—	—	B

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

- A = May cause the least adverse habitat impact.
- B = May cause some adverse habitat impact.
- C = May cause significant adverse habitat impact.
- D = May cause the most adverse habitat impact.
- I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
- = Not applicable.

## Heavy Crude Oils and Residual Products

Table 47. HEAVY CRUDE OILS AND RESIDUAL PRODUCTS (Category IV): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.  
This table should not be used without the accompanying text in the document.

<i>Response Method</i>	<i>Exposed Rocky Shores (1a)</i>	<i>Exposed Solid Man-made Structures (1b)</i>	<i>Exposed Wave-cut Platforms (2a)</i>	<i>Sand Beaches (3) &amp; (4)</i>	<i>Mixed Sand and Gravel Beaches (5)</i>	<i>Gravel Beaches (6a)</i>	<i>Riprap (6b)</i>	<i>Exposed Tidal Flats (7)</i>	<i>Sheltered Rocky Shores (8a)</i>	<i>Sheltered Solid Man-made Structures (8b)</i>	<i>Sheltered Tidal Flats (9a)</i>	<i>Salt to Brackish Marshes (10a)</i>
<b>Natural Recovery</b>	A	A	A	C	C	B	B	A	B	B	B	B
Barriers/Berms	—	—	—	B	B	B	—	B	—	—	B	B
<b>Manual Oil Removal/Cleaning</b>			B	A	A	B	A	B	C	B	C	C
Mechanical Oil Removal	—	—	—	B	B	C	C	D	—	—	—	D
<b>Sorbents</b>	A	A	A	A	B	B	B	B	C	B	B	A
Vacuum	A	—	A	A	B	B	A	B	B	—	B	B
<b>Debris Removal</b>	A	—	A	A	A	A	A	B	A	A	B	B
Sediment Reworking/Tilling			—	B	B	B	—	C	—	—	—	D
<b>Vegetation Cutting/Removal</b>			—	C	C	—	—	D	D	—	D	C
Flooding (deluge)	—	—	B	B	C	C	C	A	B	—	B	B
<b>Low-pressure, Ambient Water Flushing</b>			B	B	B	B	C	C	B	C	D	B
High-pressure, Ambient Water Flushing			B	—	D	B	B	—	B	C	—	—
<b>Low-pressure, Hot Water Flushing</b>			C	C	C	B	C	—	D	C	—	—
High-pressure, Hot Water Flushing			C	—	D	C	C	—	D	C	—	—
<b>Steam Cleaning</b>	D	D	D	—	D	D	D	—	D	D	—	—
Sand Blasting	D	D	D	—	—	—	D	—	D	D	—	—
<b>Solidifiers</b>	—	—	—	—	—	—	—	—	—	—	—	—
Shoreline Cleaning Agents			C	C	C	B	B	—	B	B	—	B
<b>Nutrient Enrichment</b>	—	—	—	B	B	B	B	I	C	I	I	B
Natural Microbe Seeding	—	—	I	I	I	I	I	I	I	I	I	I
<b>In-situ Burning</b>	—	—	D	C	C	C	D	—	C	—	—	B

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

- A = May cause the least adverse habitat impact.
- B = May cause some adverse habitat impact.
- C = May cause significant adverse habitat impact.
- D = May cause the most adverse habitat impact.
- I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
- = Not applicable.

## Non-Floating Oil Products

**Table 48.** NON-FLOATING OIL PRODUCTS (Category V): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.

This table should not be used without the accompanying text in the document.

<i>Response Method</i>	<i>Exposed Rocky Shores (1a)</i>	<i>Exposed Solid Man-made Structures (1b)</i>	<i>Exposed Wave-cut Platforms (2a)</i>	<i>Sand Beaches (3) &amp; (4)</i>	<i>Mixed Sand and Gravel Beaches (5)</i>	<i>Gravel Beaches (6a)</i>	<i>Riprap (6b)</i>	<i>Exposed Tidal Flats (7)</i>	<i>Sheltered Rocky Shores (8a)</i>	<i>Sheltered Solid Man-made Structures (8b)</i>	<i>Sheltered Tidal Flats (9a)</i>	<i>Salt to Brackish Marshes (10a)</i>
<b>Natural Recovery</b>	A	A	A	D	C	B	B	A	B	B	B	B
Barriers/Berms	—	—	—	B	B	B	—	B	—	—	B	B
<b>Manual Oil Removal/Cleaning</b>	B	B	B	A	A	A	A	B	C	B	C	C
Mechanical Oil Removal	—	—	—	B	B	C	C	D	—	—	—	D
<b>Sorbents</b>	A	A	A	B	B	B	B	B	C	B	B	B
Vacuum	A	—	A	A	B	B	A	B	C	—	B	B
<b>Debris Removal</b>	A	—	A	A	A	A	A	B	A	A	B	B
Sediment Reworking/Tilling	—	—	—	B	B	B	—	C	—	—	—	D
<b>Vegetation</b>	—	—	—	C	C	—	—	D	D	—	D	C
<b>Cutting/Removal</b>												
Flooding (deluge)	—	—	B	C	C	C	C	B	C	—	C	B
<b>Low-pressure, Ambient Water Flushing</b>			B	C	C	C	C	C	C	C	D	B
High-pressure, Ambient Water Flushing			B	—	D	B	C	—	C	C	—	—
<b>Low-pressure, Hot Water Flushing</b>			C	C	C	B	C	—	D	C	—	—
High-pressure, Hot Water Flushing			C	—	D	C	C	—	D	C	—	—
<b>Steam Cleaning</b>	D	D	D	—	D	D	D	—	D	D	—	—
Sand Blasting	D	D	D	—	—	—	D	—	D	D	—	—
<b>Solidifiers</b>	—	—	—	—	—	—	—	—	—	—	—	—
Shoreline Cleaning Agents	C	B	C	C	C	B	B	—	B	B	—	I
<b>Nutrient Enrichment</b>	—	—	—	C	C	B	B	I	C	I	I	B
Natural Microbe Seeding	—	—	I	I	I	I	I	I	I	I	I	I
<b>In-situ Burning</b>	—	—	—	C	C	C	—	—	C	—	—	C

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

- A = May cause the least adverse habitat impact.
- B = May cause some adverse habitat impact.
- C = May cause significant adverse habitat impact.
- D = May cause the most adverse habitat impact.
- I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
- = Not applicable.

**3230.2**

### **3230.3 Pre-Beach Cleanup**

Refer to Section 9800 of this Plan

### **3230.4 Storage**

To expedite removal of spilled oil, refined products, and contaminated materials from marine waters during an emergency-response, containment activities (to include temporary waste storage) may be conducted at appropriate on-shore locations [22 CCR 66270.1(c)3]. The transportation of oil and contaminated material to temporary waste storage sites during an emergency response is exempt from transportation and manifesting requirements, per the draft MOU between OSPR and DTSC (these requirements are also exempted per 22 CCR 66263.30 and/or 66263.43 for transportation-related emergency responses.

During an immediate response, all oil and/or oily materials may be recovered, transported, or transferred to temporary waste storage sites and are exempt from any hazardous waste generator and facility permit requirements for a period of 30 days, per the draft MOU between OSPR and DTSC. Additional 30-day extensions may be granted by DTSC, under appropriate circumstances.

Temporary storage sites can be an area or facility approved by the IC or Unified Command for characterizing and/or temporarily storing recovered oil and/or oily materials used, collected, or recovered during an oil spill response. Such an area may include, but is not limited to, permitted or interim status hazardous waste storage facilities, other non-permitted facilities, vessels, barges, tanks, vacuum trucks, barrels, containers, storage piles, or other appropriate containment methods and locations that may be used to hold recovered oil and/or oily materials. Temporary storage sites need not be owned, operated, or leased by the RP. Temporary storage sites that are on-shore should be established at locations that are convenient to the recovery operations for the temporary storage of recovered petroleum products, and contaminated materials and debris. Siting of the temporary storage site, however, must be done with the concurrence of the following:

#### **FOSC**

DTSC [The DTSC duty officer can be contacted at one of the following phone numbers: Region 1 (Sacramento) @ 916-255-3564; Region 2 (Oakland) @ 510-540-3739; Region 3 (Glendale) @ 818-551-2830; and Region 4 (Long Beach) @ 310-590-4968.]

California Coastal Commission/Bay Area Conservation and Development Commission Joint Oil Spill Program (BCDC/CCC) [for further information on obtaining temporary and/or emergency permits within the coastal zone, contact the CCC/BCDC at (415) 557-3683]

Regional Water Quality Control Board (RWQCB), and

Local health, fire and emergency services departments.

If a Unified Command is established, OSPR will facilitate the contact of the state and local government agencies through the Liaison Officer.

### **3240 Disposal**

#### **Crude oil and Refined Petroleum Products**

Under California law, material released or discharged to marine waters of the state are defined as waste. Once the final disposition of a specific waste is determined, the waste may be redefined as a product or material and may no longer will be subject to waste management requirements.

Crude oil spilled to marine waters, recovered, and transported to a refinery may be considered a product and may not be subject to hazardous waste management regulations [California Health and Safety Code (CHSC), 25943.2]. The collected crude oil may be shipped to the refinery of original destination or a refinery that can accept the spilled crude oil. Refined

petroleum products that are recovered from marine waters may also be handled as a product if they can be used for their originally intended purpose (i.e. fuel, fuel oil, etc.)(CHSC 25250.3).

There are other avenues by which recovered petroleum may be managed as a material (CHSC 25143.2). These approaches include recycling the petroleum through incineration, as a fuel, a substitute for raw material feedstock, or as an ingredient used in the production of a product (i.e. asphalt). The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) should be consulted for more information on these and other management options.

State law requires the consideration of recycling; therefore, recycling should be a top priority and will be undertaken if at all possible. The latest published list of companies that recycle oil is presented in Section 4552.6 and the latest published list of licensed used oil haulers is presented in Section 4556.1. A discussion of waste minimization and recycling options is also included in this section.

Recovered petroleum "products" that are not accepted by a refinery or that cannot be recycled must be managed as a waste. In order that the appropriate management mechanism is determined for the recovered petroleum, the waste must be characterized by a state certified laboratory to determine if the waste is hazardous or non-hazardous. It is the responsibility of the Responsible Party (RP) to have the waste accurately characterized for proper disposition [Title 22, Sec. 66260.200(c) of the California Code of Regulations (22 CCR)].

### **3240.1 Waste Management and Temporary Storage Options**

One of the major issues associated with an oil spill response is the proper management of the recovered petroleum product, as well as the contaminated cleanup materials, soil, and debris. How these are managed is dependent on how they are characterized - as either a solid waste, hazardous waste or a hazardous material (used or reused). This subsection presents a general approach to the management of the various types of wastes collected during an oil spill.

#### **3240.11 Waste Management Options**

Under California law, a hazardous substance released or discharged to marine waters of the state is defined as a waste and must be characterized as either hazardous or nonhazardous and managed accordingly. Once the waste is characterized and its final disposition is determined, the waste may be redefined and managed as a material, rather than a waste.

In accordance with CHSC 25143.2, recovered hazardous wastes may be managed as a hazardous material rather than a hazardous waste by utilizing any one of the following methods:

The material is used or reused as an ingredient in an industrial process to make a product, and is NOT reclaimed;

The material is used or reused as a substitute for commercial products, and is NOT reclaimed;

Without first being reclaimed, the material is returned to the original process from which it was generated as a substitute for raw material feedstock, as long as the material is returned as a substitute for raw material feedstock, and the process uses raw materials as principal feedstock;

The material is shipped to the site from where it was generated or managed, or to another site owned by the same generator, and is either burned as a fuel or is recombined with normal process streams to produce a fuel. However, it should be noted that the DTSC has agreed with DFG/OSPR that recovered oil originally headed for a refinery will NOT be considered a hazardous waste and may still be sent to the refinery.

Remember, hazardous "material" management activities need to comply with a different set of regulations, which include, in part, the local fire code for storage and handling requirements, and 49 CFR for shipping requirements. Do NOT use a hazardous waste manifest when shipping hazardous materials - use a Bill of Lading.

In managing hazardous wastes, one must also be responsible for adhering to the waste minimization philosophy behind good waste management practices. Waste generation and disposal can be minimized through proper waste characterization, handling, segregation, treatment, and recycling; while only solid, non-recyclable wastes are actually "disposed" of. The following waste management hierarchy should always be used in the management of both hazardous and nonhazardous wastes:

1. Eliminate or minimize the amount of waste generated
2. Source reduction
3. Use and reuse as a material
4. Reclaim or recycle
5. Treatment
6. Disposal

Dispose of waste only if the above priorities are not feasible !!

The need to minimize the volume and toxicity of all hazardous wastes has been made clear and explicit in state and federal regulations; however, other reasons to minimize waste would include protection of public health and the environment, as well as economic incentives, liability incentives, and public relations incentives.

#### **3240.12 Crude oil and Refined Petroleum Product.**

Crude oil spilled into marine waters that is recovered and transported to the refinery of original destination or a refinery that can accept the crude oil for use or reuse may be considered a "material" rather than a "waste" and, therefore, not subject to the more stringent hazardous waste management laws and regulations [California Health and Safety Code (CHSC), Section 25143.2]. Refined petroleum products that are recovered from marine waters may also be handled as a product if they can be used for their originally intended purpose (i.e. fuel, fuel oil, etc.), per CHSC 25250.3.

There are other avenues by which recovered petroleum may be managed as a material (CHSC 251143.2). These approaches include recycling the petroleum through incineration, as a fuel, a substitute for raw material feedstock, or as an ingredient used in the production of a product (i.e. asphalt). The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) should be consulted for more information on these and other management options. The latest published list of companies that recycle oil and the latest published list of licensed used oil haulers can be obtained from DTSC.

Recovered petroleum "products" or "materials" that are not accepted by a refinery as a material, should then be recycled. Since state law requires the generator of a waste to consider recycling before other waste management methods, recycling should be the next waste management priority. To ensure that the appropriate waste management method is utilized for the recovered petroleum, the waste must be characterized by the generator either through knowledge of the waste or through analysis by a State certified laboratory to determine if the waste is hazardous or non-hazardous. It is the responsibility of the Responsible Party (RP) to have the waste accurately characterized for proper disposition [Title 22, Section 66260.200(c) of the California Code of Regulations (22 CCR)].

### **3240.13 Discharge to Sea of Water Separated From Recovered Oil.**

Oil recovered at sea typically contains significant amounts of seawater. In order to maintain the efficiency of the skimming process this water must be separated/decanted from the oil and discharged back to the ocean during recovery operations. Separated sea water typically contains elevated levels of hydrocarbons and thus the discharge of this material may constitute a discharge of a pollutant; therefore, in 1995, a Memorandum of Understanding (MOU) had been entered by the SWRCB and OSPR which addresses all permits and requirements pertaining to the incidental discharge of wastewater during oil spill response activities. The MOU finds that these discharges are exempt from the regulation under a National Pollution Discharge Elimination System (NPDES) permit. Additionally, the MOU also provides that the SWRCB will recommend that the coastal RWQCB waive the issuance of waste discharge requirements for these types of discharges.

The "discharge" of separated/decanted water is recognized by the Federal On-Scene Commander (FOSC) as an integral part of off-shore skimming operations and as an excellent waste minimization tool. The FOSC or designee, therefore, may authorize the discharge of separated/decanted water back into the sea within the catenary area of a boom/skimming system outside of State waters (3 miles), in accordance with the MOU between SWRCB and OSPR. The exception to this will be in NOAA Marine Sanctuary waters. With the addition of the Monterey Bay National Marine Sanctuary a significant portion of the coastline is now part of the National Marine Sanctuary program. Other sanctuaries include Point Reyes/Farallon Island, Channel Islands San Miguel, Santa Cruz, Santa Rosa, Anacapa, Santa Barbara Island, Richardson and Castle Rock, and Cordell Banks. Federal law prohibits the discharge of material, such as separated water, to marine sanctuaries unless permitted by the Administrator of the sanctuary program. Negotiations are presently under way seeking pre-approval to discharge separated waters during an emergency response to oil spills within the sanctuaries. Until pre-approval is obtained, permit for the discharge of separated water must be obtained from the Sanctuary Program, via the appropriate field office, before any discharge can take place. The phone numbers for the Sanctuary field offices are as follows: Monterey Bay @ (408) 647-4258; Channel Islands @ (805) 966-7107; and Farallones and Cordell Bank @ (415) 556-3509.

### **3240.14 Contaminated Debris**

Contaminated debris including organic material, contaminated cleanup equipment (i.e., PPE, sorbents, booms, etc.) and other contaminated materials that cannot be recycled must be managed as a waste. The materials must also be characterized before the appropriate waste management option is determined.

If the debris is contaminated only with petroleum or any of its fractions, then it is exempt from regulation under Section 25143.12 of the Health and Safety Code if ALL of the following conditions are met:

The debris consists exclusively of wood, paper, textile materials, concrete rubble, metallic objects, or other solid manufactured objects;

The debris is not subject to regulation as a hazardous waste under the federal act;

The debris does not contain any free liquids, as determined by the paint filter test specified in the regulations adopted by the department;

The debris is disposed of in a composite lined portion of a waste management unit which is classified as either a Class I or Class II landfill in accordance with 23 CCR 2530, *et seq.*, the disposal is made in accordance with the applicable requirements of the California Regional Water Quality Control Board and the California Integrated Waste Management Board, and, if the waste management unit is a Class II landfill, it is sited, designed, constructed and operated in accordance with the minimum standards applicable on or after 10/9/93 to new or expanded municipal solid waste landfills, which are contained in 40 CFR 258.1, *et seq.*

### **3240.15 Oiled Animal Carcasses**

Oiled animals and carcasses should be collected and turned over to the California Department of Fish and Game, Office of Oil Spill Prevention and Response (OSPR) representatives who are responsible for wildlife rehabilitation and collection of carcasses for natural resource damage assessment (NRDA). The identification and location of OSPR representatives can be provided by the Unified Command Center. OSPR will be responsible for the disposal of the oil-contaminated carcasses.

### **3240.16 Waste Evaluation**

#### **Federal Criteria**

Is the Material a Waste? (40 CFR 261.2)

A solid waste is an abandoned, recycled, or inherently waste-like discarded material that is not specifically excluded in 40 CFR 261.4.

Is the Waste Excluded from Regulation? (40 CFR 261.4):

Domestic sewage sludge

- Ash wastes from the combustion of fossil fuels
- Industrial wastewater subject to regulation under the Clean Water Act
- Spent sulfuric acid
- Certain chromium wastes
- Mining overburden
- Mining wastes
- Wastes from conditionally household waste
- Exempt small quantity generator

Is the Waste a Listed Hazardous Waste? (40 CFR 261.30-33):

- Wastes from non-specific sources ("F" List)
- Wastes from specific sources ("K" List)
- Discarded commercial chemical products, oil specification species, container residues & spill residues thereof ("P" & "U" Lists)

Is the Waste a Characteristic Hazardous Waste? (CFR 261.20-24)

- Ignitability



- Liquid (other than aqueous with <24% Alcohol) with a flashpoint <140 F
- Nonliquid which can cause fire and, when ignited, burns persistently and vigorously
- Flammable compressed gas [49 CFR 173.300(b)]
- Oxidizer (49 CFR 173.151)
- Corrosivity
- Aqueous liquid with pH <2 or >12.5
- Liquid that corrodes steel >6.35mm/yr at 55 F
- Reactivity
- Normally unstable
- Generates Toxic Gases
- Reacts Violently
- Contains Cyanides or Sulfides
- Explosive Mixtures
- Detonates or Explodes
- Toxicity
- 40 Compounds have assigned regulatory levels
- Samples are compared to the regulatory threshold after Being Prepared Per the Toxicity Characteristic Leaching Procedure

Is the Hazardous Waste Mixed With a Non-hazardous Waste? (40 CFR 261.3)

- A Mixture of a Listed Hazardous Waste and a Non-hazardous Waste is a Hazardous Waste Unless:
- The Listed Waste Was Listed Merely Because it Exhibited a Characteristic and the Resultant Mixture No Longer Exhibits that Characteristic
- OR
- The Mixture is a Wastewater that is Discharged Pursuant to Specific Provisions of the Clean Water Act
- A Mixture of a Characteristic Hazardous Waste and a Nonhazardous Waste Only if the Resultant Mixture Exhibits a Characteristic.

Is the Waste a "Derived From" Waste? [40 CFR 261.3 (c)]

- Any Solid Waste Generated From the Treatment, Storage, or Disposal of a Hazardous Waste Unless is a Hazardous Waste Unless the Waste is Specifically Excluded or Does Not Exhibit a Character a flashpoint >t Derived From a Listed Waste

## State Criteria

Is the Material a Waste? (HSC 2412.4)

- A waste is discarded material that is not specifically excluded.
- A discarded material is relinquished, recycled, or inherently Waste-Like.

Is the Waste Listed in Appendix 10? (22 CCR, Division 4.5, Appendix X)

- Wastes listed in Appendix 10 are presumed hazardous unless proven otherwise by applying knowledge of or testing the characteristics of the waste stream

Is the Waste a Characteristic Hazardous Waste? (22 CCR 66261.21-24)

- Ignitability (22 CCR 66261.21)
- Identical criteria to federal characteristics
- Corrosivity (22 CCR 66261.22)
- Identical criteria to federal characteristics except that California regulates non-aqueous wastes in addition to aqueous wastes
- Reactivity (22 CCR 66261.23)
- Identical criteria to federal characteristics
- Toxicity (22 CCR 6626.24)
- Persistent and bioaccumulative substances
- A waste is hazardous if the soluble concentration of a substance is > its regulatory threshold known as the Soluble Threshold Limit Concentration (STLC). The soluble concentration is determined after preparing the samples with the Waste Extraction Test (WET)
- A waste is hazardous if the total concentration of a substance is > to its regulatory threshold known as the Total Threshold Limit Concentration
- Acute toxicity
- Oral LD<sub>50</sub> <5,000 mg/kg (single administration). Test species is the rat.
- Dermal LD<sub>50</sub> <4,300 mg/kg (24 hour time period). Test species is the rabbit.
- Inhalation LC<sub>50</sub> <10,000 ppm as a gas or vapor (8 hour time period). Test species is the rat.
- Aquatic Toxicity
- LC<sub>50</sub> <500 mg/l
- 96 Hour Bioassay
- Test species are either fathead minnows, golden shiners, or rainbow trout.
- Chronic Toxicity
- 16 Listed Carcinogens >0.001% (by weight)
- A waste which has been shown through experience or testing to pose a hazard to human health or the environment because of its Carcinogenicity, Acute Toxicity, Bioaccumulative Properties or Persistence in the Environment

Is the Waste a Used Oil? (HSC 25250-25250.25)

- Any refined crude oil which has become contaminated with physical or chemical impurities as a result of use
- Any refined crude oil which is no longer useful to the original purchaser as a consequence of extended storage, spillage, or contamination
- Spent lubricating fluids
- Spent industrial oils
- Contaminated fuel with a flashpoint > 100 F
- Is the Waste an Extremely Hazardous Waste? (22 CCR 66261.110)
- Acute toxicity
- Acute oral LD<sub>50</sub><50 mg/kg

- Acute dermal LD50 <43 mg/kg
- Acute inhalation LC50<100ppm
- Listed carcinogen>0.1% (by weight)
- Contains a persistent or bioaccumulative substance at > Listed TTLC
- Water Reactive
- Is the Waste a Special Waste? (22 CCR 66261.122)
- A special waste is hazardous ONLY because inorganic constituents exhibit:
- Soluble concentration > STLC
- OR
- Total concentration > TTLC
- EXCEPT THAT
- Soluble concentration in mg/kg must be < TTLC
- The generator must apply for and receive the special waste classification from the Department
- Is the Hazardous Waste Mixed with A Non-Hazardous Waste? [22 CCR 66261.3(b)(3)]
- A mixture of hazardous waste and a non-hazardous waste is hazardous waste only if the resultant mixture exhibits an Article 3 characteristic

### **3240.17 Transportation**

Recovered petroleum product not accepted at a refinery for reuse must be transported to an approved waste management facility. The type of waste management facility will be based on the results of the waste analysis performed.

#### **3240.17.1 Hazardous Waste**

Waste classified as hazardous under either federal or State regulations must be transported to a permitted or interim status hazardous waste management facility. Any shipments of hazardous waste must be done by a transporter who is registered with DTSC as a hazardous waste hauler (a list is available from the DTSC) and has a valid EPA Identification Number. Prior to removal of the hazardous material from temporary storage, a California Uniform Hazardous Waste Manifest (EPA Form # 8700-22A) must be prepared by the generator (RP or designee) for recovered petroleum and other contaminated materials (22 CCR 66263.20-66263.23). While preparing the manifest, the RP may request assistance from the on-scene DTSC representative or the DTSC regional duty officer.

All hazardous materials and wastes shipped off-site must be transported in compliance with applicable regulations. These include the RCRA regulations in 40 CFR 262-263, DOT Hazardous Materials Regulations (49 CFR 171-178), and any applicable state regulations (22 CCR 6626.20-6626.23).

### **3240.17.2 Nonhazardous Waste**

Waste that is determined to be nonhazardous but is a "designated waste" (per 23 CCR 2522) will be transported to a Class II waste management facility. Manifesting of the waste is not required but a Bill of Lading is required for transportation. The appropriate Regional Water Quality Control Board (RWQCB, list in Table E.VI.3) and local health department should be contacted to determine what waste management facility will accept the waste and any additional test requirements the facility might require (see tables E.VI.4). Removal of nonhazardous waste from temporary storage will require authorization by the Unified Command, FOSC, or SIC.

### **3240.17.3 Off-Site Waste Management Facilities**

Depending on the type of waste and how it is to be managed, you need to identify an appropriate off-site waste management facility, as follows:

Non-hazardous waste/designated waste (per 23 CCR 2522): Transport to a Class II waste management facility\*.

Non-hazardous waste/non-designated waste (per 23 CCR 2522): Transport to a Class III waste management facility\*.

Hazardous waste: Transport to a facility as a "material" for use/reuse; or to an authorized Class I hazardous waste management facility for recycling, treatment, storage, or disposal.

The Regional Water Quality Control Boards should be consulted for information on the location and disposal requirements of facilities in their region.

To avoid confusion and panic at the time of a spill incident, it usually helps to plan ahead and identify the waste management facilities (primary and alternates) to use for the different types of waste streams that are expected to be generated during a spill response and clean up. There are three approved hazardous waste management facilities in California, as follows:

1. Chemical Waste Management Co. (Kettleman Hills Facility)  
35251 Old Skyline Blvd.  
Kettleman City, CA 93239  
(209) 386-9711

This is the only class I facility that accepts liquid waste in any sizable quantity. Liquid petroleum accepted at Kettleman Hills will be transported to their subsidiary in Azusa, California and further transported out-of-state for incineration.

2. Laidlaw Environmental Services (Imperial County)  
5295 South Garvey Road  
Westmoreland, CA 92281  
(619) 344-9400

This facility will accept only solid waste.

3. Laidlaw Environmental Services (Kern County)  
2500 Lokern Road  
Buttonwillow, CA 93206  
(805) 762-7372

This facility accepts only solid waste, although it is developing the ability to process small volumes of liquid waste.

For a list of Recyclers within California, as well as in other states, call DTSC/Resource Recovery Unit at (916) 323-6042 for a copy of the California Waste Exchange Directory of Industrial Recyclers and Listing of Hazardous Wastes Available for Recycling.

**3240.17.4 List of Licensed Used Oil Haulers in California**

COMPANY NAME	LOCATION	PHONE NUMBER
Action Cleaning Corp.	San Diego	(619) 233-1881
All American Oil	Pleasanton	(415) 484-2470
Allied Oil and Pumping	San Jose	(408) 263-2222
Alviso Independent Oil	Alviso	(408) 262-2715
Amberwick Corp.	Long Beach	(562) 426-6504
American Oil Co.	Los Angeles	(213) 469-2277
Artesian Oil Recovery	Oakland	(415) 839-4234
Ashbury Oil Co.	Compton	(213) 321-1392
Asbury Environmental	San Diego	(619) 298-1610
Asbury Environmental	Fontana	(714) 350-1840
B.O.R. Industries	West Sacramento	(916) 372-2342
Balakian Drain Oil	Parlier	(209) 888-2682
Bay Area Oil Recycling	Pacifica	(415) 359-0469
Bayshore Oil Co.	Redwood City	(415) 366-6146
Bay Side Oil II, Inc.	Santa Cruz	(408) 427-3773
Blach Gold Industries	Ventura	(805) 643-16
Chico Drain Oil Service	Chico	(916) 345-9043
Cole's Services	Bakersfield	(805) 322-8250
Crane's Waste Oil	Lake Isabella	(619) 379-4377
Diamond Oil Service	San Luis Obispo	(805) 543-4977
Erickson Inc	Richmond	(510) 235-1393
Express Oil Co.	Los Angeles	(213) 586-9399
Frank W. Anderson	Calexico	(760) 357-3487
G.I. Pumping Inc	Whittier	(562) 947-8088
Gottlieb Waste Oil Co.	Concord	(415) 671-2566
GTR Transportation	South El Monte	(818) 443-6744
Hydro-Chem Services Inc.	San Francisco	(415) 822-1181
Industrial Services Co.	Los Angeles	(213) 262-9747
Interstate Oil	Chino	(909) 393-4696
IT Corporation	Torrance	(213) 378-9933
J. Bennett Oil Co., Inc.	Riverside	(714) 687-4307
J.C.'s Grease Buyers	Norco	(714) 736-1198
J.W. Butler Oil, Inc.	Lancaster	(805) 946-1124
Jack Stone Drainage Oil Co.	Long Beach	(562) 427-7216
Jim Knight Drain Oil Service	Long Beach	(562) 434-2419
K.S. Waste Oil Co.	Long Beach	(213) 731-7718

Laidlaw Environmental	Los Angeles	(213) 585-5063
Leach Oil Co., Inc.	Compton	(310) 323-0226
M.C. Nottingham Co of So Cal.	El Monte	(818) 286-3104
Oasis Pumping	Whittier	(562) 944-5225
Oil Conservation Serv., Inc.	Fresno	(209) 485-5495
Otto Sprenger	Norwalk	(213) 864-1197
Pacific Coast Oil Co.	Garden Grove	(714) 539-7002
Pacific Fuel Service	Rancho Cucamonga	(714) 980-1537
R. B. Enterprises	Ridgecrest	(619) 375-7727
R.C.A. Oil Recovery	Fremont	(510) 794-5632
Ramos Oil Recyclers	West Sacramento	(916) 371-2570
Refineries Services, Inc.	Patterson	(209) 837-4205
Reserve Fuel Services	Upland	(714) 981-2666
Roaring Camp, Inc.	Felton	(408) 335-4484
Rosemead Oil Production, Inc.	Santa Fe Springs	(213) 941-3261
Rutherford/Pacific, Inc	Compton	(213) 637-1240
Santa Clara Valley Oil	San Jose	(408) 259-5567
Sheldon Oil Co.	Suisun	(707) 425-2951
Shields Oil Co., Inc.	Covina	(714) 629-8985
Southwest Trails	Long Beach	(562) 538-5730
Speed's Oil Tool Serv., Inc.	Santa Maria	(805) 925-1369
T & T Crane & Service	Ventura	(805) 648-3348
Talley Brother, Inc.	Huntington Park	(213) 587-1217
Triad Marine & Oil Cleaning	San Diego	(619) 239-2024
U.S. Waste Oil Corp.	San Ramon	(415) 829-5288
W-H Tank Lines, Inc.	Long Beach	(800) 439-1166
Waste Oil Recovery System	Oakland	(415) 533-0750
Western Asphalt Services	Bakersfield	(805) 322-5904
Williams Tank Lines	Stockton	(209) 944-5613

## **3240.18 Waste Minimization and Recycling Opportunities**

### **3240.18.1 Debris Avoidance**

It is generally not possible to avoid the generation of oily debris resulting from the contact of floating oil with waterborne solids, however, it is possible to minimize the generation of oily debris in the coastal intertidal zone if the anticipated area of oil impact can be cleaned prior to stranding of the spilled oil. This has been successfully accomplished in a small number of past spills.

Personnel can be deployed to remove debris from beach intertidal areas to above the high tide line in order to minimize oiling of stranded debris/trash. It is important to note that such crews are not likely to be certified as required under OSHA 1910.120 and can only perform this task prior to the stranding of spilled oil. An Industrial Hygienist and/or Health & Safety specialist should be consulted regarding the limitations of these crews and the effective establishment of exclusion zones in the area of beach impact.

#### **3240.18.2 Selection of Personal Protective Equipment**

Depending upon climatic conditions and material compatibilities of personal protective equipment (PPE), waste can be minimized through the selection of reusable equipment, when possible. For instance, the use of reusable PPE (such as gloves and boots) instead of disposable PPE can minimize the generation of the oil-contaminated disposable PPE, as long as such equipment use is approved by the site safety officer. Such decisions should be made early in the response process in order to minimize the generation of contaminated PPE which is generally considered a hazardous waste and managed at a Class I hazardous waste management facility.

#### **3240.18.3 Recovered Oil and Oily-water**

In order to maximize skimmer efficiency and effectiveness, water should be decanted to the spill impact area with the approval of the FOSC and relevant state agency representatives. Operational standards (e.g., decanting only in the impact area where water depth is sufficient; no free oil) should be established as soon as skimming is initiated. In federal waters, decanting can be approved through a request to the FOSC. As discussed earlier, in state waters approval must be secured from the Regional Water Quality Control Board (see the MOU between the SWRCB and OSPR).

Both oil and oily-water recovered from skimming operations should be off-loaded to facilities (i.e.; terminals, refineries) where it can be effectively managed as a material, or recycled as a waste stream at an off-site recycling facility (i.e.; commercial refiners, reclaimers, recyclers). These facilities may be able to provide temporary waste storage in their tank or container storage areas. Prior to commencing any storage activities, however, the facility may have to obtain an emergency permit from the DTSC (approval is usually over the phone, followed by the appropriate paperwork in the mail). Additionally, any oiled debris that is recovered along with the skimmed oil must also be maintained in a secure, temporary waste storage area until it is sufficiently characterized for final disposition.

#### **3240.18.4 Sorbent Use/Reuse**

Synthetic sorbents (i.e., pads, sweeps, booms) have become standard response materials in the "mechanical recovery" of spilled oil. Their oleophilic, hydrophobic character makes them efficient at separating oil and water and they are routinely used to recover oil from solid surfaces as well (e.g., rubble, cobble and boulder shorelines; equipment/gear; vessels; etc.). Since oiled sorbent material often constitutes a substantial percentage of the oily solid waste generated during spill response and cleanup, opportunities for minimizing this waste volume should be considered.

Some sorbents are designed to be reusable (i.e., mechanized rope-mop skimmers) or can be recycled on-site with inexpensive gear (e.g., appropriate barrel-mounted wringers). Sorbent manufacturers instructions should be followed regarding the limits of effective reuse for their individual products. It is also possible to replace sorbent sweeps and booms with recyclable boom and other appropriate gear in circumstances where floating oil can be efficiently recovered without generating oiled sorbents. For example, in good-access, low energy shoreline areas (harbors, bays, inlets), it may be possible to use containment-boom and recover the trapped oil with vacuum trucks instead of contaminating large volumes of sorbent.

#### **3240.18.5 Petroleum-contaminated Soil Recycling and Reuse**

While the volume of petroleum-contaminated soil associated with coastal spills is generally lower than such volumes resulting from large inland spills, opportunities for recycling/reuse should be considered. For soils satisfying the waste profiling requirements of the state and commercial facilities, beneficial reuse as daily landfill cover after appropriate treatment is an available option in California (see Response Resources list). Recycling of oil-contaminated soil as aggregate in cold-mix and hot batch asphalt is available at four facilities in the State of Washington. Furthermore, a recently completed study of the incorporation of oily/solid residuals into construction materials concluded that a large market exists in California and that these recycling/reuse opportunities should be pursued and encouraged. It is important to note that both the costs and benefits of such recycling (less than \$100/ton and low future liability) versus disposal in a California Class I or II disposal facility (greater than \$100/ton and moderate to high future liability) are substantial. Removal of contaminated soil from temporary storage will require the authorization Unified Command, FOSC, or SIC.

#### **3240.18.6 Temporary Storage**

To expedite removal of spilled oil, refined products, and contaminated materials from marine waters during an emergency-response, containment activities (to include temporary waste storage) may be conducted at appropriate on-shore locations [22 CCR 66270.1(c)3]. The transportation of oil and contaminated material to temporary waste storage sites during an emergency response is exempt from transportation and manifesting requirements, per the draft MOU between OSPR and DTSC (these requirements are also exempted per 22 CCR 66263.30 and/or 66263.43 for transportation-related emergency responses.

During an immediate response, all oil and/or oily materials may be recovered, transported, or transferred to temporary waste storage sites and are exempt from any hazardous waste generator and facility permit requirements for a period of 30 days, per the draft MOU between OSPR and DTSC. Additional 30-day extensions may be granted by DTSC, under appropriate circumstances.



Temporary storage sites can be an area or facility approved by the IC or Unified Command for characterizing and/or temporarily storing recovered oil and/or oily materials used, collected, or recovered during an oil spill response. Such an area may include, but is not limited to, permitted or interim status hazardous waste storage facilities, other non-permitted facilities, vessels, barges, tanks, vacuum trucks, barrels, containers, storage piles, or other appropriate containment methods and locations that may be used to hold recovered oil and/or oily materials. Temporary storage sites need not be owned, operated, or leased by the RP. Temporary storage sites that are on-shore should be established at locations that are convenient to the recovery operations for the temporary storage of recovered petroleum products, and contaminated materials and debris. Siting of the temporary storage site, however, must be done with the concurrence of the following:

DTSC [The DTSC duty officer can be contacted at one of the following phone numbers: Region 1 (Sacramento) @ 916-255-3564; Region 2 (Oakland) @ 510-540-3739; Region 3 (Glendale) @ 818-551-2830; and Region 4 (Long Beach) @ 310-590-4968.]

California Coastal Commission/Bay Area Conservation and Development Commission Joint Oil Spill Program (BCDC/CCC) [for further information on obtaining temporary and/or emergency permits within the coastal zone, contact the CCC/BCDC at (415) 557-3683]

Regional Water Quality Control Board (RWQCB), and

Local health, fire and emergency services departments.

If a Unified Command is established, OSPR will facilitate the contact of the state and local government agencies through the Liaison Officer.

### **3240.18.7 Initial Treatment**

Petroleum and petroleum contaminated cleanup materials can potentially be treated at the temporary storage site. One of the treatment process that may be used is Transportable Treatment Units (TTU). The most likely treatment process undertaken with a TTU will be separation of water from collected petroleum. Another treatment method employed for separating water on-site is decanting water from temporary storage tanks.

Any water generated through the separation of petroleum and seawater may be potentially discharged to a sanitary sewer system or back to marine waters. A discharge to the sanitary sewer will require a permit from the local sanitation district, which will establish effluent requirements for the discharged water. Should a sanitation district not allow the discharge of water to its system, the recovered seawater would either be discharged back to the adjacent marine waters or transported off-site for disposal. The discharge of recovered seawater to state waters will require a NPDES permit from the local RWQCB, if it isn't under the scope of the OSPR/SWRCB MOU. A portable incinerator may be another type of TTU available during a spill response for use with contaminated material. The use of an incinerator will require a permit from DTSC and the local air pollution control district or air quality management district. The potential use of any TTU and regulatory standards must be discussed with DTSC.

### 3240.18.8 Characterization of Recovered Material

Recovered petroleum and contaminated debris not recycled must be characterized to determine their waste classification before the waste can be shipped to a proper waste management facility for final disposition. The actual testing may be conducted on representative samples of each type of waste by a State of California certified hazardous waste laboratory.

It is the responsibility of the generator, or the responsible party (RP), to have the recovered petroleum and other contaminated materials accurately characterized as either hazardous or nonhazardous for proper disposition [22 CCR 66260.200(c)]. A generator who incorrectly determines and manages a hazardous waste as non-hazardous is in violation of the hazardous waste requirements and may be subject to DTSC enforcement action.

According to 22 CCR 66264.13 and 66265.13, before an owner or operator of a treatment, storage, or disposal facility transfers, treats or disposes of any hazardous waste, the owner or operator shall obtain a detailed chemical and physical analysis of a representative sample of the waste. An analysis of the waste, therefore, must be provided to the hazardous waste management facility (HWMF) via a profile sheet, which can be obtained from the HWMF. The HWMF then determines whether or not the waste can be accepted prior to its shipment. State criteria for characterizing a waste hazardous or nonhazardous is found in 22 CCR 66261.10 and 66261.20-66261.24 while federal criteria is presented in 40 CFR 261.30-261.33 (see Figure E.VI.2). These criteria can apply to any oily-water, sorbents, booms, and debris generated as a result of an oil spill clean up. Based on waste characterization, the wastes can be further defined as either a Federal Resource Conservation and Recovery Act (RCRA) waste (hazardous waste regulated under federal regulations), a non-RCRA waste (hazardous waste regulated under California regulations only), or a non-hazardous waste. Be aware, however, that some non-hazardous wastes may be defined as a "designated waste" per 23 CCR 25522, and should be managed accordingly. Once the waste is characterized, disposition options can then be selected. Removal of recovered material from temporary storage will require authorization by the Unified Command, FOSC, or SIC.

### 3240.18.9 List of Licensed Oil Recyclers in California

COMPANY NAME	LOCATION	PHONE NUMBER
Advanced Environmental, Inc.	Fontana	(909) 356-9025
Chem-Tech Systems, Inc.	Los Angeles	(213) 268-5056
DeMenno/Erdoon	Compton	(213) 537-7100
Evergreen Oil, Inc.	Newark	(415) 795-4400
Industrial Service Oil Co.	Downey	(562) 869-9667
Laidlaw	San Jose	(408) 451-5024
Ramos Environmental	West Sacramento	(916) 371-5747

For more information on these companies, see California Environmental Protection Agency, Dept of Toxic Substances Control Alternative Technology Division's DIRECTORY OF INDUSTRIAL RECYCLERS, 1991.

### **3240.2 Decanting Policy**

Oil recovered at sea typically contains significant amounts of seawater. In order to maintain the efficiency of the skimming process this water must be separated/decanted from the oil and discharged back to the ocean during recovery operations. Separated seawater typically contains elevated levels of hydrocarbons and thus the discharge of this material may constitute a discharge of a pollutant. This issue is presently being discussed with regulatory agencies to determine if a National Pollution Discharge Elimination System (NPDES) permit, or a waiver from the permit, is required before separated/decanted water may be discharged back into state waters. The "discharge" of separated/decanted water is recognized by the USCG On-Scene Commander as an integral part of offshore skimming operations and as an excellent waste minimization tool. Therefore, the USCG OSC or his/her representative may authorize the discharge of separated/decanted water back into the catenary area of a boom/skimming system outside of State waters (3 miles). The exception to this will be in NOAA Marine Sanctuary waters.

With the addition of the Monterey Bay National Marine Sanctuary a significant portion of the coastline is now part of the National Marine Sanctuary program. Other sanctuaries include Point Reyes/Farallones Island, Channel Islands San Miguel, Santa Cruz, Santa Rosa, Anacapa, Santa Barbara Island, Richardson and Castle Rock, and Cordel Banks. Federal law prohibits the discharge of material, such as separated water, to marine sanctuaries unless permitted by the Administrator of the sanctuary program. Negotiations are presently under way seeking pre-approval to discharge separated waters during an emergency response to oil spills within the sanctuaries. Until pre-approval is obtained, a permit for the discharge of separated water must be obtained from the Assistant Administrator of the Sanctuary Program (202-606-4122) before any discharge can take place.

### 3240.3 Sample Waste Management Plan

Example

**WASTE MANAGEMENT PLAN**  
for the Careless Corporation Oil Spill  
***September 10 - 28, 1997***

#### OBJECTIVES

To handle recovered oil, oily debris, and contaminated sand/dirt resulting from the subject oil spill so that the wastes do not cross-contaminate other areas that are clean. To ensure that all recovered oil and oiled debris are managed in accordance with state and federal regulations, while keeping operating costs down.

#### GENERATOR:

**Name:** Careless Corporation

**Generator's EPA ID:** 000 000 000

#### COLLECTION SITES

##### **Collection Site Locations:**

1. Yahoo Bay Yacht Club  
1212 Wave Ave.,  
Long Beach
2. Dolphin Beach Naval Storage Station  
9875 Riptide Blvd.  
Long Beach

Approximately 8 **Vacuum trucks** (with attached skimmers) will recover oil directly from collection points and off-load at the Careless Corp. Terminal (CCT), Tank #11-XTC (130,000 bbl capacity).

The Coastal On-Water (COW) **recovery barge** (45,000 bbl capacity) will be emptied tomorrow morning at the CCT. Four additional tanks are also available with a capacity of 175,000 bbl on an as needed basis. Currently, Tank #12-XTC (130,000 bbl capacity) is available to accept oil from the barge. The recovered oil off-loaded by both the barge and vacuum trucks will later be processed into gasoline at the Careless Corp. Refinery.

#### WASTE TYPE & MANAGEMENT METHOD

**Decanted Water:** Water that is decanted from offshore skimming operations will be released back to the ocean within the operational area, per the MOU between the State Oil Response Agency and the State Water Board.

**Recovered Oil:** Managed as a recovered product, and not a waste, as it will be used/reused as raw material as part of the process at the Careless Corp. Refinery.

**Solid Oily Debris:**

If non-hazardous (oiled dirt/sand, PPE, trash, wood, seaweed, etc.) = No-Waste, Inc. and Action Clean-Up Company will transport waste to the Union Pacific Railroad loading facility (245 Pacific Rim Drive, Wilmington) and shipped to WasteCo (class II landfill) located in-state.

If hazardous = transport to the Union Pacific Railroad loading facility in Wilmington and on to Burn-It Industries (class I Waste Management Facility) in Utah.

No-Waste is currently doing beach pre-cleanup, while Action Clean-Up and Wacco Waste Co. are available to be contracted out by Careless Corp. to do waste sampling, transport to lab, clean-up, and HW transportation, as needed. All three contractors are available for oily debris beach clean up in the event oil does impact the shoreline.

**Oily Sand/Dirt:** Sand and/or dirt that are oiled will be placed in bins stored at the temporary waste storage area (if no bins area available, the sand/dirt can be stockpiled at the staging areas - lined and covered with visqueen), until results of the samples reveal whether or not the oiled sand/dirt is hazardous or non-hazardous. If hazardous, will transport to Burn-It Industries; if non-hazardous, it will be transported to Ace Asphalt for use in their asphalt processes.

**Waste from Decon Operations:** Liquid Waste: Two Baker Tanks (each with a capacity of 500 bbls) will be located at each field staging areas/command posts. Oily water waste will be held in the Baker Tanks and off-loaded by vacuum trucks and transported to Cryer & Underwood in Wilmington for recycling. Solid Waste: Solid wastes resulting from decontamination operations will be placed in the bins labeled "Contaminated Waste" (which are already located at the temporary storage sites, next to the field staging areas/command posts) and will be managed the same way as the solid oily debris.

**Waste from Wildlife Rehab Operations:** Liquid Waste - All oily water recovered from rehab operations will be stored in a portable tank for further analysis/waste characterization. If the oily water is acceptable for re-use, it will be brought back to the Careless Corp. Refinery and used as a "material" in the refinery process. If not acceptable for re-use, the oily water waste will be discharged to the sewer with an approved NPDES permit (local sanitation district has already given approval). Solid Waste - All solid oily wastes from rehab operations will be placed in visqueen-lined roll-on/roll-off bins and will be managed the same as solid oily debris.

**Oiled Animal Carcasses:** Any oiled animal carcasses will be handled and managed by state Oil Response Agency wildlife personnel.

#### WASTE MINIMIZATION:

Careless Corp. will brief field responders and contractors on waste minimization practices (e.g.: minimize use of sorbents and waste segregation), types of waste, labeling, packaging, etc.

**Pre-beach cleanup:** Pre-beach cleanup of wood, seaweed and other debris prior to oil impacting the shoreline is being conducted by No-Waste, with Action Clean-Up and Wacco Waste are on stand-by.

**Segregation of contaminated and non-contaminated wastes:** Roll-off bins will be labeled as either "Contaminated Debris" or "Non-Contaminated Debris", so as to avoid any cross-contamination.

#### TEMPORARY STORAGE SITES

**Temporary Storage Site Locations:** Yahoo Surf State Beach, Parking lot #8; and Dolphin Beach State Park, parking lot # 19. Both temporary storage sites are adjacent to the staging areas, and near the field command posts.

Ten roll-off bins lined with visqueen will be located at each temporary storage site. Each bin will be labeled "Contaminated Debris" and "Non-Contaminated Debris", so as to avoid any cross-contamination. Each bin will be numbered in a chronological manner as they are received on-site (i.e.: #1 - 10), and letters to identify the site (i.e.: "YS" for Yahoo Surf, "DB" for Dolphin Beach). The identification numbers should, therefore, look as follows: YS-1, YS-2; DB-1, etc.

Each bin will be further identified by origin of waste (e.g.: "Yahoo Yacht Club", etc.). Use duct tape and marker pen w/ indelible ink. Contents of bins will be assessed by Oil Response Agency and Careless Corp. representatives before transporting to an off-site facility. Bins will be marked as "hold" or "OK to transport" by the Oil Response Agency and Careless Corp. representatives. Assessment of bins may take up to 2 weeks, therefore, bins marked hold will be temporarily stored at the Careless Terminal, until the bins are assessed.

A State Oil Response Agency representative will also witness gauges of Baker Tanks containing liquid wastes.

**Siting & Construction** : Appropriate state agencies (Oil Response, Water Board, Coastal Commission, Toxic Substances) have approved the siting and construction of temporary storage sites prior to storage. All agencies have approved siting of temporary storage areas.

**Temporary Storage Site Permits Required:** State Toxic Substances Department and the Coastal Commission have granted emergency permits to operate the temporary storage sites as described above.

## DECONTAMINATION SITES

Decontamination of response equipment (boat, boom, etc.) and personnel, as well as recreation and fishing boats, will be conducted at the following designated locations:

Yahoo Yacht Club

Ito Industries Dock

Mira Marina

## GAUGING OF RECOVERED OIL

### **Skimmed oil from marine waters:**

1. From COW vessels to Barge #119. A state Oil Response Agency representative will be on-scene to witness gauging. Barge #119 to Careless Terminal to off-load into Tank #12-XTC. A state Oil Response Agency representative will witness gauges, watercut, and will sample oil prior to any transfers. Additionally, Marine Terminal Safety Inspectors from the State Lands Commission-Marine Facilities Inspection Division will assist the state Oil Response Agency with gauging and oil transfer operations issues, as needed.
2. During Lightering of the damaged Barge, oil will be skimmed from damaged tanks. This oil will be handled SEPARATE from the recovered skimmed oil, as this is oil that has not been spilled.
3. Oil skimmed from the water at collection points will be transported to Careless Terminal Tank #11-XTC by vacuum truck. A Careless Corp. representative (or designee) will record each load amount and the collection point from which the vacuum truck came from. A state Oil Response Agency Representative will conduct daily spot checks.
4. State Oil Response Agency will witness all final closing gauges when transfers are finished.

**Recovered oil from the beaches:** . State Oil Response Agency will be assessing the amount of oil accumulated in the bins at the temporary storage sites along with the Careless representative (or designee). Bins will not leave the temporary storage sites until this has been completed.

#### SAMPLING PROTOCOL

**Protocol:** Sampling of the recovered oil and oily debris will be followed in accordance with the attached Sampling Protocol. Sampling will be conducted by the state Oil Response Agency and/or the Careless representative (or designee). All analytical results will be shared amongst Careless Corp., state Oil Response Agency, U.S. Coast Guard, and NOAA (NRDA Team)

**State Certified Hazardous Waste Laboratory:** Careless Corp. already has a contract in place with **Del Lago Analytical**. Representative waste samples will be analyzed for flashpoint, state metals, and TCLP EPA Method 8240 to determine whether or not the waste is hazardous.

#### TRANSPORTATION

**Highway:** Action Clean-Up and/or No-waste. Both are registered hazardous waste haulers and are certified by the state Toxic Substances Department.

**Rail:** Union Pacific

Recovered oil that is considered a hazardous waste does not need a manifest to transport from the spill site to the Careless Refinery or Terminal, as it is a transportation-related spill incident and is exempt from that requirement (per regulation section xxxxx ). Recovered oil that is not considered a waste, but a material to be used/reused at the terminal, does not require manifests for transportation from the spill site to the Careless Terminal. Manifests will be used when transporting hazardous wastes (and a Bill of Lading for non-hazardous wastes) from the spill site and/or the Careless Terminal to the Wilmington Railroad transfer facility and then by rail to Burn-It Industries.

#### OFF-SITE WASTE MANAGEMENT FACILITY

**Burn-It Industries**, located in Utah.

**Ace Asphalt**, located in Azusa, California

#### REQUIRED PERMITS/GOVERNMENT AGENCY CONTACTS

**State Toxic Substances Department @ (800) 555-4998.** To obtain emergency permits for the temporary storage sites. The Toxic Substances Dept. has granted an emergency permit over the phone for the temporary storage sites.

**State Coastal Commission @ (800) 555-3886.** For work at the temporary storage sites which occurs within the coastal zone. The Coastal Commission has granted an emergency permit for the temporary storage sites and will hand-deliver it by 5:00 p.m. today.

### 3250 Decon

This section identifies general guidance procedures to be followed for vessels and equipment involved with oil spill response operations. Because these operations may involve operating within oiled waters or recovery operations, we may assume that vessels, equipment, machinery, and other gear will be impacted with oil. This plan will be used for all vessels and equipment either contaminated or suspected of being contaminated with oil to return to a non-oiled state. Note: Plan should identify decontamination location or site.

#### Concept Overview

In view of the extensive equipment inventory involved in a response effort, the On Scene Coordinator will establish decontamination zones.

All contaminated items will be cleaned to a condition of cleanliness mutually agreed upon by the Unified Command and the equipment owner.

The primary focus of this operation will be to expedite cleanup of oiled vessels and response equipment in a safe, organized and efficient manner while minimizing further damage to the environment and waste generation.

#### Equipment Decontamination

Equipment decontamination will occur in three phases:

1. Decontamination of equipment for immediate re-utilization or relocation.
2. Recovered oil is to be off-loaded from OSRV's, barges, tow-able storage bladders and cargo tanks to portable storage tanks pending disposal in accordance with Section 3240 - Disposal.
3. Full decontamination prior to demobilization.
4. An "Equipment Decontamination Form" has been provided to track equipment undergoing decontamination, it is Enclosure (A) of this section.

#### Decontamination Methods

Equipment decontamination will be done as follows:

- " The Unified Command will approve the on water decontamination of vessels.
- " On water decontamination of large oil spill response vessels (OSRVs) to be conducted at berth and/or other satellite locations, as needed.
- " Decontamination of portable equipment and small vessels less than 32', to be conducted in bermed areas as identified on the site layout diagram.

#### Oil Spill Response Vessel (OSRV)

Decontamination of large OSRVs is to occur on site. Each vessel will be placed inside standard contractor containment boom (8x12) during decontamination process. These decontamination zone areas will utilize a boom anchoring system to prevent the collapse of the perimeter protection during tidal changes and surges.

Decontamination plan will be created for each OSRV. These plans will be added as appendices to this document. Preplanning for protection of adjacent areas shall be accomplished in order to minimize cross contamination. Floating oil from sheen-emanating vessels will be minimized with sorbents as necessary to reduce potential loss outside the containment boom. Floating sorbent materials shall be utilized in natural collection points as needed to retain free-floating oil. These sorbents will be tended daily.

Mobile decontamination teams will be assigned on an as needed basis. A mobile decon team will be comprised of one supervisor, six laborers, and a designated representative. A vessel specific plan will be developed for each OSRV to ensure that skimming equipment, storage tanks, piping systems, deck gear and the vessel hull are cleaned to agreed upon standards. A marine chemist may be utilized to determine tank entry safety.

#### Portable Equipment and Containment Boom



A paved area and warehouse with appropriate space shall be identified as the final decontamination area. A support zone will be established nearby to be used for consumable supplies.

Using the Equipment Decontamination Form, Enclosure (A) of this section, either complete each section or indicate where the required information is located. Use additional sheets if more space is needed for any item.

As equipment enters the decon area through an established security checkpoint it will be recorded and tracked using the Equipment Decontamination Form.

At the beachside retrieval point, Geo-cloth or PVC (like) will be used to protect the shoreline material to prevent secondary contamination. In addition, abrasion pads will be used across the beach to prevent boom drag and secondary contamination. Large ocean boom (>30") will be retrieved by a portable crane to avoid shoreline abrasion.

A priority assessment will be attached to each piece of equipment to ensure a timely flow of equipment through the cleaning process. Logistics section will assign prioritization of equipment to be cleaned. Depending upon priority, equipment will be directed to either a bermed holding area or to immediate cleaning into one of the two decontamination pools. A Hypalon liner or like (secondary containment) will be placed under each pool with the perimeter sufficiently bermed to allow for wastewater and rainwater evacuation. All wastewater will be pumped to a poly portable storage tank for disposal. All pumps, hoses and piping will be left in place to facilitate speedy evacuation of retain. The final disposal of wash water, oiled sorbents and materials will be pursuant to the responsible parties disposal plan.

#### Cleaning Solutions

A citrus based cleaning solution (Simple Green, CitrusSolve, PES51 or like) will be utilized as a degreaser and will be applied by either an airless sprayer or hudson sprayer as applicable.

Like Decanting, before cleaning on-water equipment, permission must be obtained from the Federal or State On-Scene Coordinator.

Actual cleaning will utilize a Landa (or like) hot/cold pressure washer with a temperature range to 220F and a pressure rating up to 3000 psi. Every attempt will be exercised to mitigate noise generating equipment by placing it in insulated areas.

Oily waste/wash water will be transferred to poly storage tanks by means of a Wilden M15 pneumatic diaphragm pump.

By utilizing the PES51 product, which will not emulsify the oily water, it is possible to re-circulate rinsates back into the cleaning cycle. As each piece of equipment is cleaned, its progress is updated in the equipment resource database.

Once the piece has been determined clean by the responsible party equipment owner, the equipment is transferred to the designated "clean" holding area.

As the cleaned equipment exits the decon site it is logged out on the database. A status report will be printed daily as needed.

#### Equipment and Supplies

The following list of equipment and supplies will be needed for the Decontamination Group operations.

#### Machinery and Equipment

4      Landra Pressure Washers w/200' hose

- 10 Hose, Suction 3" x 25'
- 25 Hose, Discharge 3" x 25'
- 4 Wilden M15 Air Diaphragm Pumps
- 4 Portable Air Compressors, Diesel
- 20 Fire Hose, 1 1/2" x 50'
- 1500 Containment Boom, (8"x12"), feet
- 2 Generator, Diesel, 7.5kw
- 4 6500 Gallon Poly Storage Tanks
- 2 Airless Sprayer, Paint Type
- 5 Hudson Sprayer, Metal Can
- 2 Shop Vac, Industrial
- 2 Coppus Blower
- 2 25 Ton Mobile Cranes with Straps & Spreader Bars
- 2 10K LB Forklifts
- Refueling Vehicle
- Transportation Equipment (Flatbeds, Trucks, etc)
- Personnel Transportation
- Vessel Platforms for Hull Cleaning
- 3 Vacuum Trucks

#### Tools

Small Tool Kits

Shovels, Plastic, Non Sparking

Scrapers

Ladders

Squeegees

Plastic Hand Scoops

Push Brooms

Hand Carts

Ice Coolers, 20-30 Gallon

Water Coolers

Extension Cords

Utility Knives  
Assorted Fire Hose Fitting and Wash Nozzles  
Barrel Grapple  
Fuel Cans, 5 Gallon  
Caution Tape  
Barrel Pumps  
Sorbents  
Sorbent Pads, Bales  
Sorbent Sweep, Bales  
Sorbent Role, Spc Sxt 638  
Oil Snare, on Rope  
Consumables  
Ice  
Water  
Rope, 3/8 Poly  
Hand Cleaner  
PES 51, Citrus Based Cleaner  
Duct Tape  
Motor Oil  
Diesel Fuel  
Gatorade (or similar)  
Office Supplies  
Calculator  
Cellular Phones  
Radios, VHF  
Portable Computer w/Printer & Modem  
Fax Machine]  
Tables  
Folding Chairs, Metal  
Site Demobilization

Upon final breakdown and closure of the decontamination operation, a joint operation survey of the facility will be conducted by the responsible party, USCG and other participating agencies.

Any signs of oil escapement past the secondary containment will be thoroughly cleaned, by hot water pressure washing or other appropriate methods, to a mutually agreed condition of cleanliness.

### 3250.1 Sample Decon Form

Equipment Decontamination Form						
Company						
Contact Person				By		
Phone				Contract		
Item	Quantity	Unit	Location	Date Started	Date Released	FOSC

## 3260 Dispersants

### Background

The following process has been developed by the California Department of Fish and Game, Office of Spill Prevention and Response (OSPR) and the National Oceanic and Atmospheric Administration's Hazardous Materials Response and Assessment Division to provide for the timely and effective use of dispersants for oil spills in marine waters off California.

There are presently two commonly recognized approaches to remove significant quantities of spilled petroleum from marine surface waters. The most common technique involves mechanical skimming devices, which typically remove less than 20% of the spilled petroleum (National Research Council [NRC], 1989). The second and more controversial method is the use of chemical agents (e.g. dispersants) to disperse oil into the water column. The effectiveness of chemical dispersants has been reported to range from zero to 100 percent depending on the type of petroleum spilled, the dispersant used, and the approach employed to estimate effectiveness (NRC, 1989). A third approach, in-situ burning, is still in the developmental stage.

Dispersants offer advantages over skimming technology when addressing dispersible oils. These include: dispersants can be applied in offshore or remote areas where the use of skimming vessels may be limited or response times protracted; dispersants can be used more effectively in sea states where skimming vessels may not be able to operate; and aerial application of dispersants can more quickly address larger areas of spilled petroleum than skimming technology. In addition, dispersants can be used in concert with mechanical skimming devices to increase the rate of surface oil removal.

Dispersion of petroleum into the water column does not alleviate the risk of petroleum-related impacts on the environment. Dispersant application does however, have the potential to accelerate cleanup of spilled petroleum on the surface of the water and at the same time reduce the risk of petroleum-related impacts on environmentally sensitive areas. In the case of California, environmentally sensitive areas include the productive intertidal regions, tidal inlets, tidal marshes and other wetland areas of the coastal islands and mainland and the surface waters where endangered marine mammals and large concentrations of sea birds might exist.

The controversial aspects of dispersants relate primarily to their effectiveness and toxicity. The effectiveness of dispersant application depends on many factors including: type and weathered state of spilled petroleum; the dispersant used; sea state; and application efficiency. It is thus difficult to predict in advance the precise effectiveness of dispersant application at any one spill due to the many controlling variables (NRC, 1989).

A recent review of dispersant toxicity studies (NRC, 1989) suggests that the present generation of dispersants do not themselves present a significant threat to marine life. The primary dispersant related threat to the environment comes from the dispersion of spilled oil constituents into the water column. However, studies show that the acute toxicity associated with dispersed oil is likely to be short term as the dispersed oil is typically diluted within hours to levels below those expected to produce impacts on the water column community. These findings, coupled with the potentially severe consequences to natural living resources when oil is on the water's surface or deposited within the productive intertidal regions, suggest that when possible the dispersion of oil may be the best response choice after an oil spill has occurred.

The California marine oil spill response community relies almost exclusively on skimming technology to recover spilled petroleum in the open ocean. Though dispersants have been used in the past, consideration of and consent for their use has been slowed by the lack of an

effective, well reasoned decision-making/approval process. Owing to the logistical constraints and relatively small window of opportunity in which dispersants may be effectively applied, the decision to use dispersants must be made in a timely fashion.

The purpose of this document is to combine an existing Quick Approval Zone policy for use of dispersant in the waters 15 nautical miles or more off the coast of California with California's draft policy for use of dispersants in state waters. The resulting dispersant use decision-making policy is designed to address the use of dispersants in all waters off the coast of California.

Regional Philosophy

In 1994, the 11th U.S. Coast Guard District and Region IX of the U.S. Environmental Protection Agency (EPA) along with the State of California and other members of the Regional Response Team (RRT), developed a Quick Approval Zone Plan to expedite dispersant use in the offshore water of California at a "safe" distance from environmentally sensitive areas (Region 9 RRT. 1994). The actual area of the Quick Approval Zone (QAZ) is the waters from the Oregon border to a point 15 nautical miles from the Mexican border ( to provide the Mexican government with input into dispersant use decisions that may affect their waters), and west from a line 15 nautical miles from the nearest point of land and extending out to the western most limits of the national Exclusive Economic Zone (Figure 1). Special cases were made for offshore islands, which also had a 15 nautical mile dispersant use buffer zone. The separation of the QAZ from California waters was undertaken to accommodate the State until it could develop a dispersant decision process for California waters including the environmentally sensitive near shore areas as required by State statute.

The QAZ Plan was a streamlined dispersant use checklist process to provide the Federal On Scene Coordinator (FOSC), who is the federal representative in the Unified Command (UC), with a mechanism to secure RRT permission or denial for dispersant use within one to two hours.

Until the present, the State had no uniform published approach or guidelines for dispersant use. In early 1995, the OSPR finalized a "draft" Dispersant Use Decision Process (DUDP) pursuant to State statutory requirements which addressed the use of dispersants in State waters (OSPR, 1995). The purposes of the 1995 document were to provide: a written position and guidelines for dispersant use in state waters; a process for incorporating dispersant efficacy and biological resources data into the decision making process; and a speedy DUDP for examining dispersant.

While the QAZ process was designed to provide a quick dispersant response in waters away from environmentally sensitive areas, the State's DUDP was designed to protect the most environmentally sensitive areas, when possible, through selected dispersant use. In general, the State has identified environmentally sensitive areas as the near shore surface waters, including those surrounding the offshore islands of the state, where endangered marine mammals and thousands to hundreds of thousands of sea birds may exist at any one time and the highly productive tidal inlets and intertidal regions of the mainland and offshore islands.

The State's premise on dispersant use is that in general, petroleum on the surface of the ocean poses more of an immediate and long-term risk to living marine resources and habitats than petroleum dispersed into the water column. There are exceptions to this approach and they are identified in the Quick Approval Process (QAP) boundary definition and discussed in the QAP Checklist backup material provided in Appendix I.

### **3260.1 Dispersant Options**

Refer to the California Dispersant Plan [Appendix XII of the REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rtr9web/rcp.htm)

### **3260.2 Dispersant Checklists**

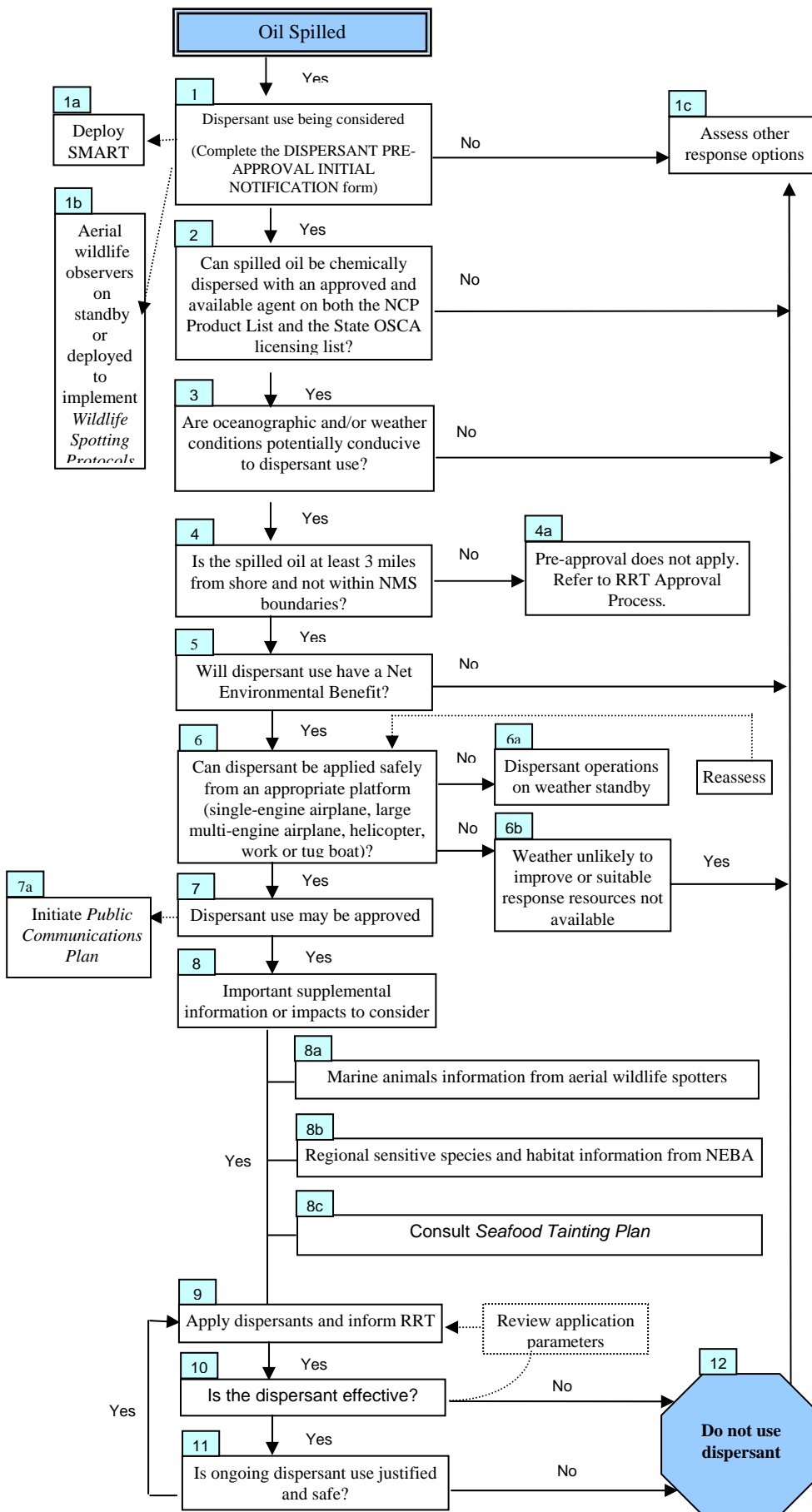
Refer to the California Dispersant Plan [Appendix XII of the REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rrt9web/rcp.htm)

### **3260.3 Preauthorized Zones**

Refer to the California Dispersant Plan [Appendix XII of the REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rrt9web/rcp.htm)



## 3260.4 Dispersant Response Plan Flowchart



Dispersant Decision Summary			
Spill location: _____			
Decisions approved by: _____			
Box Decision	Initials:	Time:	Date:
1	Yes/No	_____	_____
2	Yes/No	_____	_____
3	Yes/No	_____	_____
4	Yes/No	_____	_____
5	Yes/No	_____	_____
6	Yes/No	_____	_____
7	Yes/No	_____	_____
8	Yes/No	_____	_____
9	Yes/No	_____	_____
10	Yes/No	_____	_____
11	Yes/No	_____	_____
12	Do Not	_____	_____
Use _____			

### **3260.5 SMART Protocol**

Refer to the California Dispersant Plan [Appendix XII of the REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM)

### **3260.6 Types of Equipment Required**

Refer to the California Dispersant Plan [Appendix XII of the REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM)

## **3270 ISB - *In Situ* Burning**

### **Background**

There are presently two commonly recognized approaches to remove significant quantities of spilled petroleum from marine surface waters. The most common technique involves mechanical skimming devices, which, for large spills, typically remove less than 20% of the spilled petroleum (National Research Council, 1989). The second and more controversial method is the use of chemical agents (e.g., dispersants) to disperse oil into the water column. The effectiveness of chemical dispersants has been reported to range from zero to 100% depending on the type of petroleum spilled, the dispersant used, and the approach employed to estimate effectiveness (National Research Council, 1989).

Burning has distinct advantages over other oil spill countermeasures. It offers the potential to rapidly convert large quantities of oil into its primary combustion products with a small percentage of other unburned and residue byproducts (Evans et al., 1992). This technique could be the most effective of all in dealing with a large spill at sea and in removing large quantities of oil from the water environment before it comes ashore (S.L. Ross Environmental, 1990). Until recently, this response technology has not been regularly used, due largely to the lack of understanding of the combustion products and the principles governing the combustibility of oil-on-water (Evans, et al., 1992) as well as the lack of the equipment necessary to carry out a burn within the window of opportunity. Much of the renewed interest in in-situ burning has resulted from years of study of both the dynamics of burning oil on the water and the combustion products produced during an in-situ burn.

In-situ burning removes the surface oil by driving much of it into the atmosphere in the form of combustion gases and soot. As such, in-situ burning reduces the environmental threat and impacts posed by on-water spills but only at the cost of increasing the potential threat posed by the airborne plume. In-situ burning, however, does have the potential to accelerate cleanup of spilled petroleum on the surface of the water and at the same time reduce the risk of petroleum-related impacts on environmentally sensitive areas. In the case of California, environmentally sensitive areas include the productive intertidal regions, tidal inlets, tidal marshes and other wetland areas of the coastal islands and mainland, and the surface waters where endangered marine mammals and large concentrations of sea birds might exist. The problem for decision makers is to compare the effects of burning versus not burning and choose the option that provides the greatest net benefit to the environment, without causing undue public health impacts. Every oil spill situation is unique. Weather and sea state conditions that are most favorable for mechanical cleanup (calm winds and sea state), are not favorable for dispersants. However, dispersants might be the best response option in remote off-coast areas with choppy seas. Although limited by the ability to contain oil, in-situ burning might be the best option in areas where it is imperative to remove large quantities of oil quickly to protect on-water resources (such as in the sea otter range or the Carillon Islands). It is important that all response options be available for use at the time of a spill so that the best, most appropriate response can be used.

### **Regional Philosophy**

The primary object of oil spill abatement and cleanup is to reduce the adverse effect of spilled oil on the environment. Physical removal and subsequent disposal or recycling/re-use is the preferred method.

However, mechanical recover may be limited by equipment capability, weather and sea state, storage and disposal problems, and spill magnitude. Use of in-situ burning may be considered by the OSC when the preferred recovery techniques are inadequate and in-situ burning will lessen the environmental impacts of the spill.

#### Authority

The National Contingency Plan, Section 300.910 authorizes the OSC, with the concurrence of the EPA representative to the RRT and, as appropriate, the concurrence of the State representative to the RRT with jurisdiction over navigable waters threatened by the release of discharge (of oil) and in consultation with the DOC and DOI natural resource trustees, when practicable, to authorize the use of in-situ burning on a case-by-case basis. The Commandant of the USCG has pre-designated the USCG Captains of the Port under his jurisdiction of On-Scene Coordinators for oil spills, and has delegate authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act to them. The USEPA has been delegated authority under Subpart J of the NCP to authorize use of in-situ burning for control of oil spills.

California Government Code Section 8670.7(f) delineates the Administrator of the Office of Spill Prevention and Response, Department of Fish and Game as having the State authority over the use of all response methods, including, but not limited to in-situ burning. The Governor of the State of California has delegated state representation on the RRT to the Administrator of the OSPR.

#### Annual Review

It will be the charge of the RRT ART Working Group to annually review the use of in-situ burning and report its findings to the RRT at a scheduled meeting. The group will be responsible for the administrative upkeep of the contact list as well as insuring that the plan is updated to reflect any changes in regional polices (including those of Region X, the state of Oregon and Mexico), and technological advances.

### **3270.1 ISB Options**

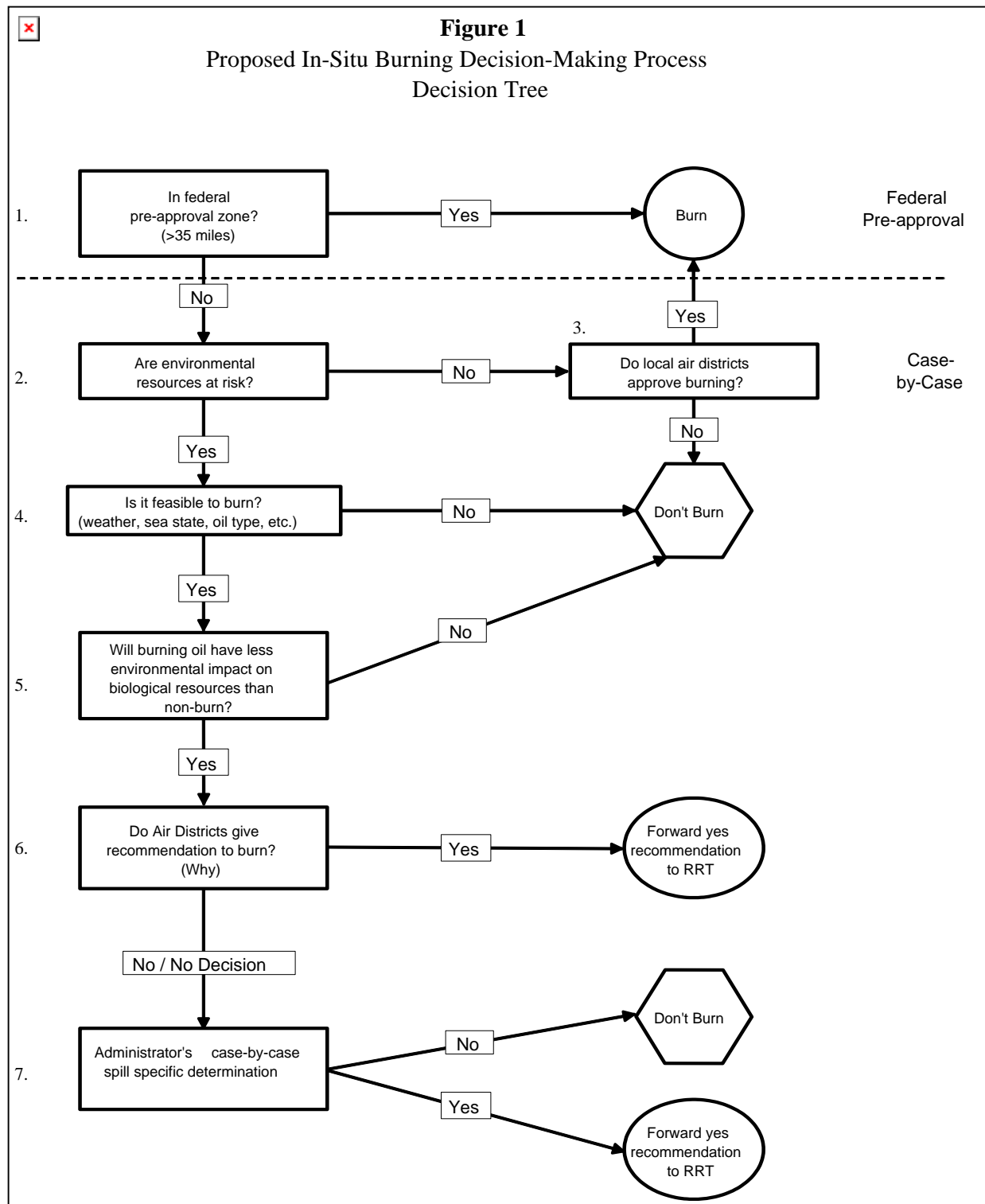
Refer to following Sections

### **3270.2 ISB Checklists**

#### **3270.21 Procedures for a Case-by-Case Request**

- 1) The FOSC contacts the proper agency representatives on the RRT (Appendix 3) and informs them that a request to utilize in-situ burning may be forthcoming. The FOSC will have the RRT remain on standby for the conference call in step 3.
- 2) ART Unit of Planning Section completes the In-Situ Burning Decision-Making Process submits summary of findings and information to UC on Case-by-Case Checklist Form and Supplemental Information Form.
- 3) If FOSC, based on information submitted by the ART Section, decides that a request for in-situ burning is appropriate, the FOSC schedules conference call with RRT representatives or alternates at first reasonable opportunity.
- 4) Conference call is conducted and Yes/No decision made based on information provided on FOSC Checklist, Supplemental Information Form or any other sources requested by the RRT, including information from the local air district.
- 5) The ART Unit of the Planning Section will commence with operations if a YES Decision is forthcoming.

## 3270.22 ISB Decision-Making Process Tree



### Decision-Making Points Explanations

The following discussion addresses the seven decision-making points that are a part of the approval process for the use of in-situ burning in marine waters. The discussion briefly identifies the nature of each point and also provides the rationale for each decision point. The number points correspond to the numbers in parentheses in the In-Situ Burning Decision Tree (found on the previous page).

1. If the proposed zone of in-situ burn is 35 miles off-shore and falls within the criteria of the Federal pre-approval zone, then an in-situ burn is Federally authorized by the RRT. State and local jurisdictions will be notified consistent with the provisions outlined in the LOA.
2. Most of the marine waters off California must be considered environmentally sensitive areas due primarily to the presence of foraging seabirds, migrating marine mammals, offshore islands with their marine mammal rookeries and haul outs, and the productive rocky intertidal and sub tidal regions and associated kelp forests.
3. This specific path of the decision-making process would be very rare, indeed. There are not many situations (none foreseeable) under which an oil spill would not pose a threat to environmental resources. This decision point was included for purposes of completeness. If the unlikely situation occurred where environmental resources were not threatened, the UC would rely heavily on the recommendation of the local air districts for a burn/no burn decision.
4. Weather and sea state conditions can greatly affect the ability to burn oil on water. A minimum burn thickness is necessary to sustain combustion, so containment is always an issue. As this will mostly likely be accomplished by booming operations, those weather and sea state conditions that limit booming operations will operationally limit the ability to burn. As a general guideline, wave heights between 8-10 feet and wind speeds between 15-20 knots are generally the upper limits for boom operations.
5. The selection of in-situ burning as a cleanup/response tool is made using the hypothesis that spilled petroleum on the surface of the water (and eventually on the shoreline) or dispersal into the water column is more of a threat to natural resources than the combustion products are in the air stream. The hypothesis is tested using a database that presents the resources at risk both on the surface of the water and within the surface micro layer and airstreams, by season, and how exposure to oil might affect the exposed species on a population basis. The risk analysis is based on the effects of petroleum on species populations at large and not individual animals, per se. All trustee agencies, local, state and federal, will work within the UC to determine if an in-situ burn will provide a net environmental benefit and better facilitate the protection of highly sensitive environmental resources.
6. Meteorological and other air dispersion characteristics will be an important component in the decision to recommend an in-situ burn by the local APCDs. Although vertical mixing is not usually a concern on the open water, plume dynamics can change if the wind direction changes and the plume comes into contact with landmasses. For purposes of a case-by-case determination, the local air districts will provide their best professional judgment with respect to potential public health concerns and forward a recommendation to the UC.
7. There may be times when in-situ burning may be considered when local air districts are not in full support of the operation. Such circumstances would include the following:
  - a) if onshore contact with human populations is expected to be small enough to limit the level of concern; or

b) to take advantage of the rapid elimination of oil that in-situ burning affords before weather conditions change making cleanup almost impossible and causing extensive environmental damage. If the local air districts do not recommend the use of in-situ burning, the reasoning behind this must be detailed for review by the FOSC and possibly the RRT, should a recommendation for burning be forwarded. The information that should be detailed including any projected air mixing capability, any modeling and/or air quality exposure information and if concerns can be alleviated by means other than a non-burn decision (having people stay in houses for duration of burn), burning at night or non-peak hours. This information should be detailed on the supplemental case-by-case form.

8. Once the Checklist is completed and a decision for in-situ burning use is generated, the UC will forward their request, along with any requested data, to the RRT via a phone conference call. Based on the information provided, the RRT will provide an approval/disapproval decision for in-situ burning use.

### **3270.23 Case-by-Case Checklist**

The Case-by-Case Checklist is used by the Unified Command to determine whether a request should be forwarded to the Regional Response Team for In-Situ Burning Use. If the answer to any of the questions is no, further information must be gathered and summarized to support the position that an in-situ burn should be considered. This information, as well as all other information, should be forwarded to the RRT.

#### Checklist:

Is the spilled petroleum burnable?

Can the appropriate equipment be made available in a timely manner to effectively conduct an in-situ burn?

Are weather and oceanographic conditions favorable for an in-situ burn?

Does the in-situ burn pose less of an environmental risk than leaving the petroleum on the water surface?

If required, have state and international boundary considerations been addressed?

Has the local air district recommended the use of in-situ burning?

Has the ART Unit of the spill response team recommended the use of in-situ burning?

Basic information regarding the spill (weather, location of slick, type of oil, trajectory analysis, resources at risk, etc.) - see attached forms.

#### Phone Call List (refer to the contact list in Appendix III)

<u>EPA</u>	Y/N
<u>USCG</u>	Y/N
<u>DOC</u>	Y/N
<u>DOI</u>	Y/N
<u>CALIFORNIA</u>	Y/N
<u>AIR DISTRICTS</u>	Y/N

## Support Information For Case-by-Case

### 1. Spill Information

#### A. Incident Information:

Cause of Spill:

Date and Time of Spill:

Location:

Volume and Type of Release (Continuing vs. Instantaneous):

Potential Volume to be:

#### B. Characteristics of Spilled Oil:

Oil Type/Name:

Specific/API Gravity:

Flash Point:

Pour Point:

Viscosity:

#### C. Weather and Water Conditions/Forecast:

Water Temp.:

Air Temp.:

Current Information:

Wind Speed/Direction (present and 48hr projection):

Sea- State and 48Hr Projection:

Tide Information and 48hr Projection:

Comments:

#### D. Oil Trajectory Information:

Surface Area of Slick:

24hr Slick Trajectory:

48hr Slick Trajectory:

Expected Land Fall (Location/Time):

Comments:

### 2. Biological Resources at Risk:

(Provided by OSPR in Consultation with Federal Trustee Agencies)

#### A. On-Water Resources

#### B. Shallow Sub tidal Resources

#### C. Intertidal Resources

#### D. Anadromous Resources

#### E. Significant Surface Micro layer Resources

### 3. Supplemental Information:

Below, please detail any reservations that may exist on the part of the local air district or any other technical specialists with respect to a proposed in-situ burn.

- A. Nature of the Objections and Organization Raising the Objection:
- B. Overriding Concerns to the Objection and Proponent of this Position:

### **3270.3 Preauthorized Zones**

#### **3270.31 Pre-approval Zone**

This zone is designated in the "Letter of Agreement (LOA) Between US Coast Guard, US EPA, and US Department of commerce and the US Department of the Interior Concerning the Use of In-situ Burning as a Response Method to Oil Pollution for areas 35 - 200 nautical miles off the California coast. Pre-approval areas are defined as those areas 35 to 200 miles off the California Coast and the areas around special jurisdictions, such as the Marine Sanctuaries, National Parks and National Wildlife Refuges, Department of Defense reservations or other jurisdictions at San Nicholas and San Clemente Islands, and any other Federal lands or jurisdictions. The FOSC will determine if conditions are met to authorize an in-situ burn as delineated in the Letter of Agreement and notify the RRT and the California Department of Fish and Game as soon as feasible after the decision is made.

#### **3270.32 Case-by-Case Zone**

Case-by-case areas are defined as those areas not designated within the pre-approval zones. This includes all marine waters within 35 miles off the California coast as well as areas of special jurisdiction as detailed above. The FOSC will obtain approval from the EPA representative to the RRT and the California Department of Fish and Game (CDF&G) representing the State of California. Whenever fish or wildlife resources may be affected, the EPA and State representative to the RRT may consult with the DOI and DOC natural resource Trustees, including Sanctuary Managers as applicable.

#### **3270.33 Letter of Agreement for ISB in Federal Waters**

The following is a Letter of Agreement among the U.S. Coast Guard, U.S. Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA) and U.S. Department of the Interior (DOI) discussing the potential use of In-situ Burn in Federal waters (35-200 miles). It includes an In-Burning Plan, In-Situ Burn Monitoring Plan, Site Safety Plan for In-Situ Burning, and In-situ Burn Boom Operations Procedures.



LETTER OF AGREEMENT  
AMONG  
US COAST GUARD (USCG),  
US ENVIRONMENTAL PROTECTION AGENCY (USEPA),  
US DEPARTMENT OF COMMERCE,  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA),  
AND  
US DEPARTMENT OF THE INTERIOR  
CONCERNING THE USE *IN-SITU* BURNING AS A  
RESPONSE METHOD TO OIL POLLUTION  
FOR THE AREA 35-200 NAUTICAL MILES OFF THE CALIFORNIA COAST  
PURPOSE

The Region IX Mainland Regional Response Team (RRT-IX Mainland) recognizes that mechanical recovery, *in-situ* burning and chemical dispersants are the three primary means of dealing with oil discharges into the waters of the United States. While mechanical removal is the preferred method, the RRT-IX Mainland recognizes that *in-situ* burning is a viable option in conjunction with, or in lieu of mechanical or other types of recovery. The purpose of this Letter of Agreement is to provide concurrence of the US Environmental Protection Agency (USEPA) representative, the US Department of the Interior (DOI) representative, and the US Department of Commerce (DOC)-National Oceanic and Atmospheric Administration (NOAA) representative for the use of *in-situ* burning for oil discharges on the waters within the jurisdiction of the RRT-IX Mainland 35-200 nautical miles off the Coast of California within the geographical boundaries described in Geographical Boundaries, Page two. This concurrence is given to the federally pre-designated US Coast Guard Federal On-Scene Coordinators (FOSC). This agreement gives guidelines to allow the FOSC to use *in-situ* burning in a timely manner to: (1) prevent or substantially reduce a hazard to human life; (2) minimize the adverse environmental impact of the spilled oil, and (3) reduce or eliminate, the economic or aesthetic losses of recreational areas.

This agreement for pre-approval is necessary, due to the time constraints under which burning is a viable option. In developing this pre-approval agreement, the environmental impacts associated with an on-water oil burn have been evaluated in relationship to other mechanical and chemical alternatives. It is the view of the signatories that the overall environmental benefits of *in-situ* burning outweigh the relative environmental costs, except in those circumstances noted in this agreement.

If the conditions for pre-approval are not met, selected representatives in the RRT-IX Mainland must be involved prior to commencing with any *in-situ* burn. In accordance with the provisions of the National Contingency Plan, this means that the concurrence of the US EPA representative to the RRT, in consultation with the natural resource trustee Federal agencies, is required. If the burn is being considered within the area 0-35 nautical miles off the California Coast, consultation with the State of California representative to the RRT-IX Mainland is also required. If the burn is being considered within State waters, the concurrence of the State of California representative is required.

AUTHORITY

Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan (the National Contingency Plan or NCP) provides that the Federal On-Scene Coordinator (FOSC) with the concurrence of the US Environmental Protection Agency (USEPA) representative to the Regional Response Team (RRT) and the concurrence of the State with jurisdiction over the navigable waters polluted by the oil discharge, may authorize the use of *in-situ* burning of oil spills. The Commandant of the US Coast Guard has pre-designated the USCG Captains of the Port under his jurisdiction as On-Scene Coordinators for oil spills, and has delegated authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act (FWPCA), as amended, to them. The Governor of the State of California has delegated responsibility to coordinate State approval for proper usage of *in-situ* burning for control of oil spills within State waters to the State of California Office of Oil Spill Prevention and Response (OSPR), within the Department of Fish and Game (DFG). The USEPA has been delegated authority under Subpart J of the NCP to authorize use of *in-situ* burning for control of oil spills.

### SCOPE

The USCG, USEPA, NOAA, and DOI agree that the physical removal of discharged or spilled oil from the water surface is the primary method of control. Furthermore, it is recognized that the most effective response to an oil spill may include a combination of mechanical recovery, *in-situ* burning and dispersant or other chemical use. As such, this Letter of Agreement sets guidelines under which *in-situ* burning may be used by the USCG Federal On-Scene Coordinator on or in Federal waters 35-200 nautical miles off the Coast of California - waters which are also within the boundaries of the Eleventh Coast Guard District.

### GEOGRAPHICAL BOUNDARIES

The geographical area covered by this Agreement is the Pacific Ocean at a distance 35-200 nautical miles from the Mainland California Coast.

### PROTOCOLS

As attested to by the signatures set forth below, the USEPA, the USDOC-NOAA, and the USDOl agree with the USCG that the pre-designated USCG FOSC may consider the use of *in-situ* burning of oil discharges, as defined in the NCP, in accordance with the following guidelines.

### GUIDELINES

1. As per the NCP, 40 CFR Part 300.120, the authority to use *in-situ* burning of oil discharges in accordance with this Agreement is vested in the pre-designated USCG FOSC. The pre-designated USCG FOSCs along the California Coast are the Captain of the Port of San Francisco, the Captain of the Port of Los Angeles-Long Beach, and the Captain of the Port San Diego. This authority may not be delegated.
2. The USCG FOSC may authorize the use of *in-situ* burning without obtaining the concurrence of the USEPA representative or the Federal natural resource trustee representatives to the RRT-IX Mainland, when, in the FOSC's judgment, human life is threatened or when all of the following three conditions are met:
  - A. *In-situ* burning is a viable option for oil removal; and
  - B. The potential plume caused by the burn will not expose unprotected human populations to more than 150 ug/m<sup>3</sup> of particulates less than 10 microns in diameter averaged over a one-hour period as determined by the FOSC (on-scene worker safety shall be addressed by the Site Safety Plan, meeting OSHA requirements); and
  - C. The plume or heat from the burn will not result in greater impact to sensitive wildlife resources than would the spilled oil (in situ Burning Checklist information shall be compiled by the FOSC in advance of the burn).

3. Mechanical recovery equipment shall be mobilized on scene, when feasible, as a backup capability should *in-situ* burning prove ineffective
4. Wind patterns will be predicted by the NOAA SSC, and will be monitored in real time prior to and during the burn by the FOSC. If the prevailing wind direction is either parallel to the shore or away from the shore, it will be assumed that there is no unprotected human exposure above 150 Ug/M3 of particulates less than 10 microns in diameter averaged over a one-hour period as determined by the FOSC.
5. A designated Federal agency representative will be on scene to observe the burn and the prevailing wind direction. If practical, so as not to create an unnecessary delay, monitors from the DOI and DOC-NOAA will be provided they try to observe the burn and record results. Any of these observers/monitors has the authority to halt any burn if he observes that the conditions in Paragraph 2 are no longer true. The protocol for observing and halting a burn is described in the *In-situ* Burning Monitoring Plan (Appendix III).
6. In any case where the circumstances do not meet the criteria set forth in Paragraph 2, the pre-authorized use of *in-situ* burning is not authorized.
7. If the FOSC feels *in-situ* burning should be used in areas not met by Paragraphs 2.A., 2.B., 2.C., or in areas not part of the pre-authorized geographical boundaries, the FOSC must request approval from the pertinent RRT-IX Mainland member agencies, in accordance with the NCP requirements. The FOSC shall submit the request along with the required information listed in the provided *in-situ* Burning Checklist.
8. Burning will be conducted by trained professionals using recognized techniques and technology.
9. Burning will be conducted in a way that allows for rapid controlling and stopping of the burn to account for wind shifts. When a decision is made to conduct a burn operation, the FOSC shall notify the USCG Co-Chair for the RRT-IX Mainland. The Co-chair shall notify the signatories of this agreement immediately.
10. Contained burning is recognized as the preferred method of burning, using burn resistant boom or similar technology. The ignition of slicks is not permitted if there is a significant chance of igniting the source or if there is a significant hazard to adjacent structures or vessels.

#### DOCUMENTATION, MONITORING AND EVALUATION

1. NOTIFICATION AND REPORTING TO THE RRT. If the FOSC decides to conduct an *in-situ* burn, a description of the operation shall be documented and submitted to the RRT-IX Mainland as soon as possible following the burn. Typical information to be included is listed in Appendix II (an example of the *in-situ* Burning Plan from the Oceania RRT), Appendix III (an example of the *in-situ* Burning Monitoring Plan from the Oceania RRT), and Appendix IV (an example of the *in-situ* Burn Site Safety and Health Plan from the Oceania RRT). These appendices must be modified as appropriate so that information provided is geographically pertinent to the given *in-situ* burn conditions. The evaluation noted in Paragraph 3 of this section will be completed as part of the FOSC Report. An FOSC Report shall be required whenever an *in-situ* burn is conducted.
2. DOCUMENTATION. The FOSC will ensure that all information described in the previous Paragraph 1 is documented.
3. MONITORING. The Federal natural resource agencies and the USCG will conduct monitoring of the *in-situ* burn in general accordance with the example *In-situ* Burning Monitoring Plan, attached as Appendix III. As part of the Monitoring Plan, oil samples shall be taken prior to the burn and samples of any floating residue shall be taken following the burn.

4. EVALUATION. The FOSC shall include a full evaluation of all *in-situ* burning applications in any FOSC report following an incident. The report should comment on burn (s), supported by visual record (video, photos) and parties. Data should include estimates of product and analysis of oil residue.

Federal resource agencies shall evaluate the *in-situ* burning to assess environmental and endangered species impacts after ignition.

5. NOTIFICATION OF STATE AGENCIES. The State of California representative to the RRT-IX Mainland (representative from OSPR, DFG) will be notified, along with the other RRT representatives in accordance with Paragraph 1. of this Section. The State representative will be responsible for notifying other appropriate State and, local agencies.

OTHER NOTIFICATIONS. The USCG is responsible for notification of neighboring regions (RRT-Region X) and Mexico - depending upon the location of the *in-situ* burn site.

#### AMENDMENTS

This Letter of Agreement will be reviewed annually and amended as appropriate.

This Letter of Agreement may be amended in writing in whole or in part as is mutually agreeable to all parties thereto.

This Letter of Agreement may be canceled by any party hereto upon thirty (30) days written notice to the other parties.

DATE

//s//

KATHLEEN G. SHIMMIN  
USEPA REGION IX  
CO-CHAIR, RRT-IX MAINLAND

4/10/97

//s//

WILLIAM H. BOLAND  
CAPTAIN, U. S. COAST GUARD  
CO-CHAIR, RRT-IX MAINLAND

4/10/97

//s//

DAVID M. KENNEDY  
US DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
REPRESENTATIVE TO THE RRT-IX MAINLAND

4/10/97

//s//

PATRICIA SANDERSON PORT  
US DEPARTMENT OF THE INTERIOR  
REPRESENTATIVE TO THE RRT-IX MAINLAND

4/10/97

Appendix I Overview of *In-situ* Burning as an Oil Spill Response Tool

Appendix II *In-situ* Burning Plan [this Appendix is an example of the information pertinent to *in-situ* Burning; it was developed for Oceania and must be adapted for the area off the California Coast]

Appendix III *In-situ* Burning Monitoring Plan [this is an example from Oceania, and it must be adapted for the area off the California Coast]

Appendix IV Site Safety Plan for *In-situ* Burning - [Oceania Site Safety Plan included as example; some language has been adapted for the area off the California Coast]

Appendix V *In-situ* Burn Boom Operations Procedures [Oceania version included as example; Region IX-Mainland version to be developed by those involved in Unified Command Operations phase]

Appendix VI Resolution of Questions Re LOA

## APPENDIX I OF ISB LOA

### OVERVIEW OF INSITU BURNING AS AN OIL SPILL RESPONSE TOOL

Burning has distinct advantages over other spill response tools. First, it offers the potential to remove large quantities of oil rapidly from the environment. *In-situ* burning could potentially remove as much oil in one day as mechanical methods could in one month. In addition, *in-situ* burning could prevent a large amount of shoreline contamination and injury to biota by removing oil before it spreads and moves to other areas. Second, *in-situ* burning requires less equipment and personnel than do other response tools. It can be used in areas where other methods cannot because of distances and lack of infrastructure. Third, burning significantly reduces the volume of material requiring disposal - compared to mechanical recovery. Mechanically -recovered oil must still be transported, stored, and properly disposed. This involves equipment, personnel, time, money, and an approved Resource Conservation and Recovery Act (RCRA) disposal site. Often, these resources are not available in sufficient quantities when large spills occur.

Burning also has disadvantages. The most obvious are the large black smoke plume that is produced by burning oil and concerns about potential associated health effects.

Additionally, oil must be a minimum thickness of 2 to 3 millimeters (mm) to burn efficiently; thin slicks will not burn. This can be partially countered with the use of fire booms to concentrate oils into thicker slicks before burning. However, as oil spreading and dispersion take place over time, the ability to achieve this minimum thickness becomes increasingly difficult.

*In-situ* burning is considered a trade-off between the ability to remove large amounts of spilled oil from the water surface in a short period of time and the human health effects and ecological impacts of burn by-products. Preliminary data from recent test burns indicate that airborne emissions are not a serious concern at distances greater than a few miles, given the proper atmospheric conditions.

### OPERATIONAL LIMITATIONS

1. FIRE BOOM. The application of *in-situ* burning requires the physical collection and containment of oil to maximize the efficiency of the burning process and to provide a means to control the burn. Generally, this is accomplished by the use of a fire boom or some other type of boom.
2. IGNITION. Heavy oils require longer heating times and a hotter flame to ignite compared to lighter oils. Many ignition sources can supply sufficient heat. These include pyrotechnic igniters, laser ignition systems, and aerial ignition systems. Each has pros and cons to their use. Whichever method is used, considerations of safety and efficiency must enter into the decision process.
3. OIL THICKNESS. The rule of thumb of *in-situ* burning is that oils can be effectively burned if they are consistently 2 to 3 mm thick.
4. GATHERING. Igniting weathered oil is generally not a problem with most ignition sources because they have sufficient temperature and burn time to ignite most oils. Weathered oil requires a longer ignition time and higher ignition temperatures.
5. EMULSIFICATION. The effect of water content on oil ignition is thought to be similar to that of weathering. It is certain that oil containing some water can be ignited and burned. It is suspected that burning may break down the water-in-oil emulsion. If a burn can be started, then water content is likely not a problem.

### SAFETY CONCERNS

1. FIRE HAZARD. Care must be taken that the burn be controlled at all times to ensure the safety of personnel and property. This precludes burning at sources such as tankers, ships, or tank farms unless means are taken to ensure that the flame cannot propagate from the burn location to the source.
2. IGNITION HAZARD. Personnel and equipment involved in ignition of the oil slick must be well coordinated. Weather and sea conditions need to be kept in mind and adequate safety distances be kept at all times. Specialized ignition equipment, unknown fire behavior and uncertain flash-points introduce safety risks.
3. VESSEL SAFETY. Burning at sea may involve the use of several vessels operating in close proximity, perhaps at night or in conditions of poor visibility. These conditions are hazardous by nature and generally require training and close coordination. Maneuverability while towing boom or positioning other containment equipment will require skilled personnel.
4. TRAINING. Training of personnel to operate equipment for *in-situ* burning should be developed to minimize the risk of injury and accident. Training should meet all applicable OSHA regulations and guidelines. Workers may require respiratory protection and protective clothing, based on risk evaluations by trained site safety or industrial hygiene personnel.

Other hazards can include the exposure of personnel to extreme heat conditions, smoke and fumes; working under time constraints or extended periods of time. Personnel involved with burning operations must be well briefed on the plan of operations, with site safety stressed, and must be notified of all changes from the approved burn plan. The need for burning could be questioned and should be reconsidered if conditions (e.g., weather, operations, equipment) pose a threat or danger to human health and safety, or facilities. This section is not inclusive of all safety concerns. As more knowledge is gained from burning, it is most likely that additional safety concerns will be identified. The site safety plan shall specify worker safety practices and equipment requirements.

#### HUMAN HEALTH/TOXICITY CONCERNS

Many experts believe that the human health risk from oil fire smoke is relatively small, particularly when compared to health and safety risks associated with mechanical remediation. This assessment, coupled with the likelihood that the lighter fraction of a spill will evaporate unless burned (thereby imposing its own set of health concerns) suggests that the risk is worth considering.

Burning oil produces a visible smoke plume containing smoke particulates, combustion gases, unburned hydrocarbons, residue left at the burn site and other products of combustion. It also results in the evaporation and release of volatile compounds from the oil. Public health concerns relate to the chemical content of the smoke plume and the downwind deposition of particulates. It should be noted that not burning an oil spill also introduces its own air quality concerns. Analysis of the physical behavior of spilled oil has shown that 50 percent of a light crude oil spill can evaporate fairly readily, and it is the acutely-toxic lighter fractions of a crude oil mix that quickly move into the atmosphere.

Results of recent burn tests indicate that burning *in situ* does not yield significant emissions above that expected for similar types of combustion, such as forest fires. Many human health experts feel that the most significant human health risk resulting from *in-situ* burning is inhalation of the fine particulate material that is a major constituent of the smoke produced. An early assessment of health concerns attributable to the Kuwaiti oil fires identified the less than 10-micron particulate matter as representing the greatest health hazard in that situation. The extent to which these particles present a health risk during an *in-situ* burn depends on the concentration and duration of exposure. It is important to remember that particulates in these concentrations are so small that they do not settle readily. They will be carried by the prevailing wind over large distances, over which their concentrations will rapidly decline.

Polynuclear aromatic hydrocarbons (PAHS) are a group of hydrocarbons produced during *in-situ* burning. They are found in oil and oil smoke, where their relative concentrations in the latter tend to be higher than in the oil itself. Possible carcinogenicity of some members make this group a serious health concern, although it is generally long-term exposure to the higher molecular-weight PAHs that is the basis for concern. Sulfur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>) are eye-and-respiratory-tract irritants that are produced by oil combustion. Concentration of PAHs decline downwind as smoke from the fire is diluted by clean air. The concentrations of other by-products of burning oil (i.e., combustible gases) also decline downwind.

### ECOLOGICAL EFFECTS

Potential ecological impacts resulting from the use of *in-situ* burning have not been extensively studied. Whether *in-situ* burning does result in ecological impacts cannot be directly determined based on existing information. Potential biological impacts are the subject of planned field and laboratory tests.

The surface area affected by burning oil is usually small relative to the total surface area of a given body of water, relative to the total depth of the water body, and is less than the area impacted by the oil slick. This does not preclude adverse ecological effects. The possibility remains that contamination at the sea surface could affect certain unique populations as well as organisms that use surface layers of the water column at certain times to spawn or feed. However, because the distribution of these populations is patchy, these impacts would most likely be localized. The same populations would also be adversely affected to some degree by an oil slick. The plume or heat from the burn will not result in greater impact to populations.

The residual material of an *in-situ* burn is a hydrocarbon compound with little structural change other than the loss of the more volatile groups. It resembles weathered oil of the same source type.

Burn residues could be ingested by fish, birds, mammals, etc. and could be a source of fouling of wildlife; however, it should be noted that the water surface is already adversely affected by oil, and any additional adverse effects from burning would be comparatively small. The extent of these spatial and temporal effects would be expected to be much less severe than those from a large oil spill contained by traditional mechanical methods. The residual material should be removed as soon as possible, and this could be accomplished using traditional spill containment and cleanup equipment and techniques.

Measurements conducted during test burns show that water temperature is not raised significantly, even in shallow confined test tanks. Thermal transfer to the water is limited by the insulating oil layer and is actually the mechanism by which the combustion of oil slicks is extinguished.

Except where conditions of pre-approval are met, the appropriate State and the Federal trustees (e.g., NOAA, DOI) are to be consulted before using *in-situ* burning on oil spills. They can identify resources of concern in the area that could be potentially adversely affected by burning *in situ*. Interests include but are not limited to:



the proximity of occurrence of the proposed burn in coastal marshes and estuaries and inland marsh/wetland environments;

the occurrence and location of threatened and endangered species in relation to the proposed burn site;

the occurrence and location of sensitive/critical habitat or resources (e.g., land) in relation to the proposed burn site; and

the benefits to sensitive habitats of burning versus the effects resulting from the land fall of oil.

## APPENDIX II: IN-SITU BURNING PLAN

THIS CHECKLIST IS PROVIDED AS A SUMMARY OF IMPORTANT INFORMATION TO BE CONSIDERED BY THE UNIFIED COMMAND IN REVIEWING ANY REQUEST TO CONDUCT IN-SITU BURNING IN RESPONSE TO AN OIL SPILL IN THE WATERS OF NORTHERN CALIFORNIA. THIS BURNING PLAN IS DIVIDED INTO SEVERAL SECTIONS OF INFORMATION ABOUT THE SPILL, WEATHER, OIL BEHAVIOR AND PROPOSED BURNING PLAN. IT IS INTENDED THAT THIS BURNING PLAN BE FILLED IN TO HELP THE UNIFIED COMMAND DETERMINE THE FEASIBILITY OF IN-SITU BURNING FOR THE IMMEDIATE SITUATION. THIS BURNING PLAN, IN CONJUNCTION WITH THE MONITORING PLAN, WILL SERVE AS THE POST BURN OPERATIONS REPORT.

### SPILL DATA

(RESPONSIBLE PARTY TO COMPLETE AND SUBMIT TO UNIFIED COMMAND)

### DATE & TIME OF PLAN

**DATE AND TIME OF THE INCIDENT:**

**LOCATION OF THE INCIDENT:**

**LATITUDE:**

**LONGITUDE:**

**DISTANCE IN MILES AND DIRECTION TO NEAREST LAND:**

**DISTANCE IN MILES AND DIRECTION TO THE NEAREST POPULATION CENTER(S):**

**TYPE AND QUANTITY/VOLUME:**

<b>RELEASE STATUS:</b>	<input type="checkbox"/> Continuous, at estimated rate of: _____ <input type="checkbox"/> Intermittent, at estimated rate of: _____ <input type="checkbox"/> One time only, flow now stopped.	Estimated quantity - bbls: _____
<b>EMULSIFICATION STATUS:</b>	Is product easily emulsified? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNCERTAIN Is product emulsified upon release? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNCERTAIN IF EMULSIFIED: <input type="checkbox"/> LIGHTLY (0-20%) <input type="checkbox"/> MODERATE (21-50%) <input type="checkbox"/> HEAVILY (>50%) <input type="checkbox"/> UNKNOWN	

**SURFACE AREA OF SPILL (SQUARE MILES) - AS OF DATE/TIME:**

**IS SOURCE BURNING NOW?** YES NO

**NATURE OF INCIDENT:**

Grounding      Transfer Operation      Collision      Pipeline      Explosion  
 Other: (Describe): \_\_\_\_\_

**VESSEL/FACILITY/PIPELINE INVOLVED:**

**RESPONSIBLE PARTY:**

**FEASIBILITY FACTORS:**

<input type="checkbox"/> YES	<input type="checkbox"/> NO	Is the oil being considered for In-Situ burning emulsified by less than 60%?
<input type="checkbox"/> YES	<input type="checkbox"/> NO	Is the oil thickness > 1/10 inch?

# IN-SITU BURNING PLAN

## WEATHER & WATER CONDITIONS

**WEATHER:** ☐ Sunny ☐ Partly Cloudy ☐ Cloudy ☐ Overcast  
☐ Mountain Showers ☐ Offshore Rain Squalls ☐ Heavy Rain

**WINDS:** Date & Time: \_\_\_\_\_  
 Onshore ☐ Knots: \_\_\_\_\_ Direction: \_\_\_\_\_  
 Offshore ☐

**SEA STATE:** ☐ Calm ☐ Choppy ☐ Swell (in feet)  
☐ <1 foot ☐ 1-3 foot ☐ >3 foot

**TIDES: (FORECAST)** Low/High Feet (+/-) Date & Time  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**SURFACE CURRENTS:** Speed / Knots Direction / To

**WATER DEPTH:** ☐ 10 - 60 feet ☐ 60 - 120 feet ☐ > 120 feet

**DAYLIGHT HOURS:** Day / Date Sunrise Sunset  
 \_\_\_\_\_  
 \_\_\_\_\_

## WEATHER & WATER 24 HOUR FORECAST

DATE & TIME OF PLAN DEVELOPMENT: \_\_\_\_\_  
 FORECASTED WIND SPEED (knots): \_\_\_\_\_  
 FORECASTED WIND DIRECTION: \_\_\_\_\_  
 FORECASTED SEA STATE: ☐ Calm ☐ Choppy ☐ Swell (in feet)  
☐ < 1 foot ☐ 1 - 3 feet ☐ >3 feet

## ESTIMATED SMOKE TRAJECTORY

Describe expected smoke plume trajectory:

Is plume expected to impact concentrated human or wildlife populations? ☐ YES ☐ NO

### FEASIBILITY FACTORS:

☐ YES ☐ NO  
☐ YES ☐ NO  
☐ YES ☐ NO  
☐ YES ☐ NO

Is the wind speed < 25 knots?  
 Is wave height < 2 - 3 feet?  
 Is visibility > 500 feet vertically and ½ mile horizontally?  
 Are rain forecasts favorable for ignition?

# IN-SITU BURNING PLAN

APPX II OF ISB LOA

**A. Location of proposed burn relative to the spill source:**

**B. Location of proposed burn relative to nearest uncontrolled ignitable slick(s):**

**C. Location of proposed burn relative to nearest sizeable downwind human population:**

**D. Location of proposed burn relative to nearest downwind concentrated wildlife population:**

**E Potential for reducing visibility at nearby airport(s) or freeway(s):**

**F. Will radio notification of human populations be required?**

☐ YES

☐ NO

**G. Proposed ignition method:**

Will burn promoters be used?

☐ YES

☐ NO

Will de-emulsifiers be used?

☐ YES

☐ NO

**H. Methods proposed for controlling the burn:**

Will fire boom be used?

☐ YES

☐ NO

# IN-SITU BURNING PLAN APPX II OF ISB LOA

## I. PROPOSED BURNING STRATEGY

- ☐ Controlled burning in fire boom under tow.
- ☐ Controlled burning of static oil contained within fire boom.
- ☐ Complete burning of a derelict or hazardous vessel.
- ☐ Controlled burning of static oil contained in a natural collection site at or near shore.
- ☐ Disposal of oiled debris by controlled burning in remote areas.

OTHER:

## J. Estimated amount of oil to be burned:

## K. Estimated duration of Burn Operations: (hours)

## L. Method of collecting burned residue:

## M. Proposed storage and disposal of burned oil residue:

## FEASIBILITY FACTORS

- ☐ yes   ☐ no   Can ignition and a complete burn occur at a safe distance from other response operations and public, recreational and commercial activities?
- ☐ yes   ☐ no   Is the smoke plume unlikely to impact areas of concentrated human or wildlife populations?
- ☐ yes   ☐ no   Are adequate fire boom, towboats and igniter resources available?
- ☐ yes   ☐ no   Are adequate notice to be given to mariners, aircraft pilots and the general public?
- ☐ yes   ☐ no   Can necessary personnel and equipment be mobilized during the in-situ burning window of opportunity?

# IN-SITU BURNING PLAN APPX II OF ISB LOA

**PLAN NUMBER:**

---

**DATE:**

---

**OPERATIONAL PERIOD:**

---

**TO:**

---

**FEDERAL OSC**

☐ **APPROVED**

☐ **NOT APPROVED**

---

SIGNATURE

Typed Name & Title:

**COMMENTS:**

## IN-SITU BURNING MONITORING PLAN

THE PRIMARY OPERATIONAL PURPOSE IN MONITORING IN-SITU BURNING OF SPILED OIL IS TO DETERMINE IF BURNING REQUIREMENTS AND OBJECTIVES ARE MET. SINCE THE CURRENT BODY OF KNOWLEDGE ABOUT BURNING IS SMALL, EACH OPERATIONAL USE PROVIDES AN OPPORTUNITY TO GATHER DATA. THE RRT WILL BE ABLE TO USE THIS DATA TO REFINE AFTER EACH SPILL RESPONSE USING IN-SITU BURNING. THESE LESSONS WILL BE INCORPORATED INTO THE IN-SITU PLAN SUBMITTED TO THE FOSC.

IT IS INTENDED THAT THIS MONITORING PLAN FORM SHOULD BE COMPLETED AFTER EVERY IN-SITU BURN EPISODE. THERE IS A FORM FOR THE BURN SUPERVISORS AND ANOTHER FORM FOR THE CASUALLY TRAINED OBSERVERS TO COMPLETE. THE ACCUMULATED DATA IS TO BE SUBMITTED TOGETHER WITH THE IN-SITU BURN PLAN TO FORM THE POST BURN OPERATIONS REPORT.

### BURN SUPERVISOR REPORT FORM

NAME OF BURN SUPERVISOR \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

NAME OF BURN EPISODE (IE: BURN 1, BURN 2) \_\_\_\_\_

DATE AND TIME OF REPORT \_\_\_\_\_

**HAS A SAMPLE OF THE OIL TO BE BURNED BEEN COLLECTED:** YES NO  
(ONLY ONE SAMPLE PRIOR TO THE FIRST BURN DURING AN OPERATIONAL PERIOD IS REQUIRED)

**METHOD OF IGNITION:**

**TIME AT START OF BURN:** \_\_\_\_\_

**TIME AT END OF BURN:** \_\_\_\_\_

**WIND SPEED DURING BURN:** \_\_\_\_\_

**WIND DIRECTION DURING BURN:**

**WAS SMOKE PLUME TRAJECTORY SATISFACTORY TO AVOID CONCENTRATED AREAS OF HUMAN OR WILDLIFE POPULATIONS?** YES NO

**DESCRIBE THE SMOKE PLUME:** (Height above water, distance, direction, dispersion, etc.)

**OBSERVATION OF EFFECTIVENESS OF THE BURN:**

**OBSERVATION OF EFFECTIVENESS OF RESIDUAL MATERIAL COLLECTION:**

# IN-SITU BURNING MONITORING PLAN

IT IS INTENDED THAT THIS OBSERVER'S MONITORING REPORT BE FILLED OUT BY THOSE INDIVIDUALS WHO MAY NOT BE EXPERTS AT IN-SITU BURNING, BUT ARE IN A POSITION TO OBSERVE THE BURN AND WITNESS ITS EFFECTS.

## OBSERVERS MONITORING REPORT

NAME OF OBSERVER

DATE AND TIME

NAME OF BURN EPISODE (IE: BURN 1, BURN 2)

ORGANIZATION

**WAS SMOKE PLUME TRAJECTORY SATISFACTORY TO AVOID CONCENTRATED AREAS OF HUMAN OR WILDLIFE POPULATIONS?**

YES

NO

COMMENTS:

**GENERAL OBSERVATIONS:**



<b>IN-SITU BURN SITE SAFETY AND HEALTH PLAN</b>				
<b>RESPONSIBLE PARTY:</b>			<b>PLAN NO. :</b> _____ (OPTIONAL)	
<b>INCIDENT FACTS</b>		<b>OPERATIONAL PERIOD</b>		
NAME: _____		FROM: _____ DATE: _____ TIME: _____		
LOCATION: _____		TO: _____ DATE: _____ TIME: _____		
DATE: _____ TIME: _____		STATUS: NEW <input type="checkbox"/> REVISED <input type="checkbox"/>		
<b>CHAIN OF COMMAND</b>				
<b>DIVISION:</b>		<b>GROUP:</b>		
<b>ON SCENE COMMANDER / BURN SUPERVISOR</b>				
<u>NAME</u>	<u>COMPANY/ORGANIZATION</u>	<u>PHONE/RADIO</u>	<u>OPERATIONAL AREA</u>	
<b>SITE SAFETY OFFICER</b>				
<u>NAME</u>	<u>COMPANY/ORGANIZATION</u>	<u>PHONE/RADIO</u>	<u>OPERATIONAL AREA</u>	
<b>ON-VESSEL SAFETY SUPERVISORS</b>				
<u>NAME</u>	<u>COMPANY/ORGANIZATION</u>	<u>PHONE/RADIO</u>	<u>OPERATIONAL AREA</u>	
<b>SITE OPERATING COMPANIES</b>				
COMPANY NAME / ADDRESS:				
<u>VESSEL CAPTAIN</u>	<u>PHONE/RADIO</u>		<u>NAME OF VESSEL</u>	
<b>HEALTH &amp; PPE REQUIREMENTS (SEE MATRIX)</b>				
*Outer Gloves	*Face Shield	*Site Characterization	*Pre-work Medical	*Zone Control
*Inner Gloves	*Sun Hat	*Air Purifying Resp.	*40 Hr. HAZWOPER	*Security
*Rubber Boots	*Sun Tan Lotion	*Supplied Air Resp.	*24 Hr. HAZWOPER	*E/S Ent. Permit
*2/3 Body Cover	*Taped Leg Joints	*Safety Glasses	*First Aid Station	*Personnel Dept.
*Full Body Cover	*Hard Hat	*Heat Stress Program	*Shade Station	*USCG Life Vests

# IN-SITU BURN SITE SAFETY AND HEALTH PLAN

## DESCRIPTION OF SITE

LOCATION OF SITE:  
(Latitude / Longitude)

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

DESCRIPTION OF SITE:

DESCRIPTION OF  
SURROUNDING AREA:

DESCRIPTION OF  
SURROUNDING POPULATION:

## COMMUNICATIONS MATRIX

### ROUTINE COMMUNICATIONS:

COMMAND VESSEL WILL PROVIDE GENERAL COMMAND FUNCTIONS FOR BURN OPERATIONS, AND IT WILL SERVE AS THE PRIMARY COMMUNICATIONS POST. ALL RADIO FREQUENCIES WILL BE CONTINUOUSLY MONITORED BY COMMAND. PERSONNEL ABOARD THE COMMAND VESSEL, AND SAFETY PERSONNEL.

### EMERGENCY COMMUNICATIONS:

AN EMERGENCY CAN BE COMMUNICATED OR DECLARED USING ANY ASSIGNED COMMUNICATIONS METHOD. ALL WORKING FREQUENCIES WILL BE MONITORED THROUGHOUT THE RESPONSE EFFORT BY THE COMMAND AND SAFETY VESSEL(S).

## CONTACT LIST:

FUNCTION & NAME	PHONE NUMBER	RADIO CONTACT
OSC:		
SOSC:		
BURN SUPERVISOR:		
SITE SAFETY OFFICER:		
COMMS OFFICER:		
SSC:		
TRUSTEES:		
TRUSTEES:		

# IN-SITU BURN SITE SAFETY AND HEALTH PLAN

## VESSEL LIST

NAME POSITION	VESSEL NAME	PHONE	RADIO

## COMMUNICATIONS METHODS

### COMMAND & CONTROL:

PRIMARY METHOD OF COMMUNICATIONS FOR THE COMMAND AND TRUSTEES GROUP IS ASSIGNED CELL PHONES. THE BURN SUPERVISOR AND COMMUNICATIONS POST SHALL ALSO HAVE CELL PHONE.

### BURN & VESSEL OPS:

PRIMARY METHOD OF COMMUNICATIONS WILL BE ASSIGNED MARINE VHF CHANNEL/FREQUENCIES

- AVIATION COMMUNICATIONS BETWEEN VESSEL AND AIRCRAFT WILL BE ON MARINE CHANNEL 18A, WHICH IS 156.900 MHz.
- THE WORKING MARINE VHF CHANNEL FOR THE LEAD BOAT AND THE SECOND BOOM TOWING VESSEL SHALL BE DETERMINED PRIOR TO OPERATIONS. IN ADDITION, ALL VESSELS SHALL MONITOR MARINE VHF CHANNEL 6 THE SPILL RESPONSE DESIGNATED HAILING CHANNEL.

IN THE EVENT OF COMMUNICATIONS EQUIPMENT FAILURE:

1. A WHISTLE WILL BE USED TO INDICATE A NEED FOR ASSISTANCE.
2. THREE (3) SHORT REPEATED-BLASTS FROM VESSEL HORN SHALL INDICATE AN EMERGENCY.

## GO / NO - GO POLICY

- EACH VESSEL COMMANDER (CDR), OPERATIONAL CDR, OR TRUSTEE CAN STOP THE COMMENCEMENT OR CONTINUATION OF THE BURN BASED ON THE SAFETY CONCERNS WITHIN EACH AREA OF RESPONSIBILITY.
- IMMEDIATELY PRIOR TO IGNITING THE BURN, THE FOLLOWING PERSONNEL SHALL BE POLLED TO DETERMINE GO/NO-GO STATUS. THE OSC, SOCS, BURN SUPERVISOR, SITE SAFETY OFFICER AND PARTICIPATING TRUSTEES.
- ANY OF THESE IDENTIFIED PERSONNEL MAY REQUEST TERMINATION OF THE BURN FROM THE OSC SHOULD CONDITIONS REQUIRED FOR THE BURN CHANGE AND ARE NO LONGER MET.

# IN-SITU BURN SITE SAFETY AND HEALTH PLAN

## PERSONNEL RESPONSIBILITIES

### BURN SUPERVISOR

- REPORTS DIRECTLY TO THE OSC.
- IS RESPONSIBLE FOR THE OVERALL BURN OPERATION, INCLUDING BUT NOT LIMITED TO: IGNITION AND TERMINATION, PRE-IGNITION CHECKLIST, GO/NO-GO POLLING OF DESIGNATED PERSONNEL, SAMPLE TAKING AND RECORD KEEPING.
- IS THE DESIGNATED BOOM COMMANDER.

### SITE SAFETY OFFICER

- REPORTS DIRECTLY TO THE BURN SUPERVISOR
- IN CHARGE WITH THE OVERALL RESPONSIBILITY OF ENSURING WORKER HEALTH AND SAFETY DURING BURN OPERATIONS.
- CONDUCTS PREBURN SAFETY BRIEFING ON OPERATIONAL PROCEDURES AND GOALS.
- IDENTIFIES POTENTIAL EMERGENCIES.
- COORDINATES IMPLEMENTATION OF THIS PLAN.
- ASSIGNS AND MONITORS ALL ASSOCIATED SAFETY PERSONNEL.

## VESSEL RESPONSIBILITIES

### COMMAND VESSEL

- SHALL SERVE AS THE ON-SITE COMMAND AND COMMUNICATIONS POST.
- BURN SUPERVISOR AND OSC SHALL CONDUCT BURN OPERATIONS FROM THIS VESSEL COMMAND POST.
- SHALL BE APPROPRIATE IN SIZE AND MANNING TO SERVE AS OPERATIONS COMMUNICATIONS AND COMMAND PLATFORM.
- SHALL SERVE AS THE LEAD BOOM TOWING VESSEL.

### SAFETY BOAT

- MONITORING AND MAINTAINING FIRE FREE ZONES
- TASKED WITH FIRE WATCH AND MAINTAINING A LIMITED FIRE FIGHTING CAPABILITY.
- ASSISTS WITH BURN OBSERVATION AND EFFECTIVENESS MONITORING.
- TASKED WITH DEBRIS RECOVERY.

<b>IN-SITU BURN SITE SAFETY AND HEALTH PLAN</b>	
<b>OPERATIONAL OBJECTIVES</b>	
1	OPERATE IN COORDINATION WITH THE COMBINED ICS TO COORDINATE BURNING ACTIVITIES WITH ALL OTHER OFFSHORE/NEARSHORE RESPONSE OPERATIONS.
2	PERFORM ON-WATER IN-SITU BURNING OPERATIONS IN ACCORDANCE WITH THE IN-SITU BURNING PLAN.
3	ON-WATER FLOTILLA IS TO AVOID THE SMOKE PLUME DURING IN-SITU BURNING OPERATIONS.
<b>SITE CONTROL</b>	
-	SITE CONTROL DESCRIPTION: THE MAIN WORK DECK OF THE VESSELS IS THE EXCLUSION ZONE DURING ACTIVE OIL SPILL OPERATIONS. THE OTHER SECTIONS AND DECKS OF THE VESSEL ARE SUPPORT AREAS. SITE CONTROL MAP: SEE ATTACHMENT 1
<b>SITE SECURITY</b>	
-	THE CAPTAIN OF THE VESSEL IS RESPONSIBLE FOR VESSEL SECURITY.  ON WATER BURN ZONE SECURITY WILL BE IMPOSED AND CONTROLLED BY THE U.S. COAST GUARD
<b>SITE CHARACTERIZATION AND MONITORING</b>	
<b>EXPOSURE POTENTIAL:</b>	
-	ZONE CONTROL WILL BE ESTABLISHED PRIOR TO ENTERING A RESPONSE AREA DEPENDING ON THE SPILL EXPOSURE POTENTIALS INCLUDING: TBX (BENZENE), H <sub>2</sub> S (HYDROGEN SULFIDE) AND LEL (LOWER EXPLOSIVE LIMIT)
-	NO ENTRY INTO AN EXCESSIVE TBX (BENZENE), H <sub>2</sub> S (HYDROGEN SULFIDE)
-	ENTRY INTO AN EXCESSIVE BENZENE ENVIRONMENT MAY BE CONSIDERED FOR SPECIAL PURPOSES IN COMPLIANCE WITH APR/SAR REGULATIONS
-	DURING IN-SITU BURN ACTIVITIES, ALL PERSONNEL WILL HAVE APR'S AVAILABLE.
<b>REQUIRED CHARACTERIZATION TESTING:</b>	
-	TBX (TEST FOR BENZENE), H <sub>2</sub> S AND LEL TESTING ARE MINIMUM REQUIREMENTS
-	SEE PAGE 3 FOR FIELD CHARACTERIZATION CHECKLIST
<b>EXPOSURE LIMITS:</b>	
BENZENE:	NIOSH HAS IDENTIFIED BENZENE AS AN OCCUPATIONAL CARCINOGEN. EXPOSURES SHOULD BE LIMITED TO THE LOWEST FEASIBLE CONCENTRATION.
H <sub>2</sub> S:	OSHA PEL - 10 ppm, IDLH - 300 ppm
O <sub>2</sub> :	10% PEL = PERMISSIBLE EXPOSURE LIMIT
O <sub>2</sub> :	>19.5% <21.5% STEL = SHORT TERM EXPOSURE LIMIT
	IDLH = IMMEDIATELY DANGEROUS TO LIFE AND HEALTH
<b>REQUIRED MONITORING:</b>	
AFTER SITE CHARACTERIZATION, BENZENE, H <sub>2</sub> S AND LEL WILL BE MEASURED ONCE PER HOUR UNLESS:	
1	ANY MEASUREMENT REFLECTS A REASONABLE POSSIBLE POSSIBILITY THAT AN STEL WILL BE REACHED. AT THIS TIME, CONTINUOUS MONITORING WILL TAKE EFFECT
2	THE SITE SAFETY OFFICER AND ON SCENE COMMANDER DECIDE THAT MONITORING INTERVALS SHOULD BE ALTERED BASED ON THEIR JUDGMENT FROM PRIOR READINGS AND CONTINUOUS JOB SITE ASSESSMENT.

# IN-SITU BURN SITE SAFETY AND HEALTH PLAN

## EMERGENCY PROCEDURES

### EMERGENCY FIRE PROCEDURE

A FIRE EMERGENCY SHALL INCLUDE ANY NON CONTROLLED BURNING WITHIN THE BURN OPERATION AREA.

- THE SITE SAFETY OFFICER OR OTHER QUALIFIED INDIVIDUAL MUST:
  - 1 TAKE CHARGE OF THE SITUATION.
  - 2 NOTIFY BURN SUPERVISOR OF THE EMERGENCY.
  - 3 NOTIFY FIRE DEPARTMENT AND SAFETY BOAT OF TYPE OF ASSISTANCE NEEDED.
  - 4 SOUND APPROPRIATE FIRE SIGNAL. (THREE (3) BLASTS OF A HORN).
- THE BURN SUPERVISOR WILL ENSURE THAT THE FIRE IS EXTINGUISHED PRIOR TO RESTARTING BURN OPERATIONS.

### EMERGENCY TERMINATION OF BURN

- IN THE EVENT THAT THE FUNDAMENTAL SAFETY CONDITIONS CHANGE OR AN EMERGENCY SITUATION ARISES AFTER INITIATION OF THE BURN, THE FOLLOWING METHODS MAY BE USED TO TERMINATE THE BURN:
  - 1 RELEASING THE TOW LINE FROM ONE OF THE TOW VESSELS WHILE THE OTHER TOW VESSEL MOVES AHEAD AT SEVERAL KNOTS.
  - 2 MOVE BOTH VESSELS AHEAD AT SEVERAL KNOTS FORCING THE OIL BENEATH THE BOOM AND REMOVING IT FROM THE COMBUSTION ZONE.
- ALTHOUGH THE OSC HAS OVERALL BURN TERMINATION AUTHORITY, ANY DESIGNATED SAFETY SUPERVISOR MAY REQUEST THE BURN BE TERMINATED.

### EMERGENCY MEDICAL PROCEDURES

- WHEN A PERSON IS INJURED, THE SITE SAFETY OFFICER OR OTHER QUALIFIED PERSONNEL MUST:
  - 1 TAKE CHARGE OF THE SITUATION
  - 2 PROVIDE NECESSARY DECONTAMINATION
  - 3 ADMINISTER FIRST AID
  - 4 ARRANGE FOR ADDITIONAL MEDICAL ASSISTANCE AS NECESSARY
  - 5 IF A SERIOUS INJURY OR LIFE THREATENING CONDITION EXISTS, NOTIFY THE USCG OPERATIONS CENTER AT SECTOR SAN FRANCISCO BAY **(510) 437-3073**  
SECTOR LOS ANGELES/LONG BCH **(562) 980-4444** OR  
SECTOR SAN DIEGO **(619) 683-6470**

# IN-SITU BURN SITE SAFETY AND HEALTH PLAN

## STANDARD PROCEDURES FOR REPORTING EMERGENCIES

WHEN CALLING FOR ASSISTANCE IN AN EMERGENCY, PROVIDE THE FOLLOWING INFORMATION:

- YOUR NAME
- LOCATION
- TELEPHONE NUMBER AT YOUR LOCATION
- NAME OF PERSON(S) EXPOSED OR INJURED
- ACTIONS ALREADY TAKEN

## EMERGENCY RESPONSE RESOURCES

### AMBULANCE

IN AN OFFSHORE EMERGENCY, EITHER A LOCAL WATER TAXI COMPANY OR THE U.S. COAST GUARD SEARCH AND RESCUE CENTER WILL PROVIDE TRANSPORTATION TO THE NEAREST AMBULANCE/MEDICAL FACILITY. DUE TO THE TRANSIENT NATURE OF THIS OPERATION. THE SITE SAFETY OFFICER WILL CONTINUOUSLY RESEARCH AND LOCATE THE NEAREST AMBULANCE SERVICE BASED ON PRESENT LOCATION.

### FIRE DEPARTMENT

DEPENDING ON THE SITE LOCATION, **DIALING 911** MAY SUFFICE FOR FIRE DEPARTMENT CONTACT.

A FIRE BOAT WILL RESPOND INSIDE OF AND UP TO \_\_\_\_\_ OUTSIDE OF \_\_\_\_\_.  
IF THE EMERGENCY IS OUTSIDE OF THIS AREA, CALL THE U.S. COAST GUARD AT  
(\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

### OIL SPILL RESPONSE

FOR ADDITIONAL RESPONSE ASSISTANCE, CALL:

### HOSPITAL/EMERGENCY MEDICAL

SINCE ON-WATER OIL SPILL OPERATIONS ARE TRANSIENT, THE SITE SAFETY OFFICER WILL CONTINUOUSLY RESEARCH AND LOCATE THE NEAREST HOSPITAL/EMERGENCY MEDICAL FACILITIES BASED ON PRESENT LOCATION. \_\_\_\_\_ BURN CENTER IS THE BEST LOCATION IN NORTHERN CALIFORNIA FOR BURNS

## EMERGENCY PHONE NUMBERS

U. S. COAST GUARD		LOCAL FIRE DEPARTMENT	
LOCAL POLICE DEPARTMENT		POISON CONTROL CENTER	
STATE OF CALIFORNIA OFFICE OF EMERGENCY SERVICES	(800)852-7550	NATIONAL SPILL RESPONSE 24 HR. REPORT HOTLINE	(800) 424-8802
USCG SEARCH AND RESCUE		CHEMTREC (24 HOUR)	(800) 424-9300

# IN-SITU BURN SITE SAFETY AND HEALTH PLAN

## THERMAL STRESS REDUCTION PROGRAM

### OPERATIONAL REQUIREMENTS

TO REDUCE THE EFFECTS OF HEAT STRESS, 2/3 SLICKER BOTTOMS ARE A STANDARD REQUIREMENT. UPPER TORSO EXPOSURE IS MINIMAL DURING NORMAL OPERATIONS. DURING OVERHEAD OPERATIONS WITH DRAPING OIL OR WHEN SPLASHING OCCURS FULL PPE WILL BE WORN

TO FURTHER REDUCE THE POSSIBILITIES OF HEAT STRESS, SUN SHADE HATS IS MANDATED ON THE VESSEL'S WORK DECK DURING LIFTING OPERATIONS. HOWEVER, THE WEARING OF HARD HATS IS MANDATED ON THE VESSEL'S WORK DECK DURING LIFTING OPERATIONS.

- HAZWOPER COLORS WILL BE ENFORCED FOR ALL HATS:
  - GREEN HAT = 24 - 48 HOURS
  - YELLOW HAT = 4 - 23 HOURS
  - WHITE HAT = NO HAZWOPER TRAINING OR NOT CURRENT WITH APPLICABLE REFRESHERS
- ABOVE 85 DEGREES (F) EITHER COOLING VESTS OR TIME LIMITATIONS WILL BE IMPLEMENTED TO REDUCE HEAT STRESS.

### HAZARD REDUCTION PROCEDURES

PRIOR TO THE VESSEL DISPATCHING FROM THE PIER, THE SHIP'S CAPTAIN (OR DESIGNATE) WILL GIVE ON-BOARD PERSONNEL A PREDEPARTURE SAFETY BRIEFING CONCERNING THE VESSEL.

PRIOR TO BEGINNING ANY ON-SITE IN-SITU BURNING WORK, THE SITE SAFETY OFFICER WILL GIVE A SITE & JOB SPECIFIC SAFETY BRIEFING TO ALL WORKERS ON BOARD THE VESSEL.

### NOTIFICATION AND DISTRIBUTION

UNITED STATES COAST GUARD  
SECTOR SAN FRANCISCO BAY  
BLDG 14 COAST GUARD ISLAND  
ALAMEDA, CA 94501-5100  
510-437-3073

### PLAN APPROVALS

RESPONSIBLE PARTY: \_\_\_\_\_  
(Signature) (Date)

UNITED STATES COAST GUARD: \_\_\_\_\_  
(Signature) (Date)

STATE OF CALIFORNIA DEPT. OF HEALTH: \_\_\_\_\_  
(Signature) (Date)

PLAN PREPARER: \_\_\_\_\_  
(Signature) (Date)



# IN-SITU BURN SITE SAFETY AND HEALTH PLAN FIELD SITE CHARACTERIZATION CHECKLIST

**DATE:** \_\_\_\_\_ **TIME:** \_\_\_\_\_

**LOCATION:** \_\_\_\_\_

**TYPE OF PETROLEUM INVOLVED:** \_\_\_\_\_

## **SPECIAL IN-SITU BURNING CONSIDERATIONS:**

THE OBJECTIVE IS TO AVOID THE SMOKE BY-PRODUCTS OF IN-SITU BURNING. KEEP VESSELS AND PERSONNEL UPWIND OF THE SMOKE PLUME. THIS IS ALSO THE BASIC PRECAUTION REQUIRED FOR EMITTED GASES. STUDIES SHOW THAT THE DANGER FROM GASES EMITTED DURING IN-SITU BURNING REMAIN SIGNIFICANTLY BELOW EXPOSURE UNITS. SUCH EMISSIONS CAN INCLUDE SULFUR DIOXIDE (SO<sub>2</sub>) (PEL = 0.2 ppm), NITROGEN DIOXIDE (NO<sub>2</sub>) (PEL = 0.1ppm), AND CARBON MONOXIDE (CO) (PEL = 35ppm). IT IS INTENDED THAT BY AVOIDING THE SMOKE THESE POSSIBLE EMISSIONS WILL NOT BE A PROBLEM.

## **PERSONAL PROTECTIVE EQUIPMENT:**

DURING ACTIVE IN-SITU BURNING OPERATIONS APR'S SUITABLE FOR BOTH ORGANIC VAPORS AND PARTICULATES SHALL BE WORN BY ALL PERSONS ON VESSELS IN PROXIMITY TO THE SMOKE

<input type="checkbox"/>	Outer Gloves	<input type="checkbox"/>	Face Shield	<input type="checkbox"/>	Rubber Boots	<input type="checkbox"/>	Taped glove gauntlets
<input type="checkbox"/>	Inner Gloves	<input type="checkbox"/>	Hard Hat	<input type="checkbox"/>	Taped Leg Joints	<input type="checkbox"/>	USCG PFD
<input type="checkbox"/>	2/3 Body Cover	<input type="checkbox"/>	Sun Hat	<input type="checkbox"/>	Air Purifying Resp.	<input type="checkbox"/>	Safety Glasses
<input type="checkbox"/>	Full Body Cover	<input type="checkbox"/>	Sun Tan Lotion	<input type="checkbox"/>	Supplied Air Resp.	<input type="checkbox"/>	Benzene Monitors

## **MONITORING EQUIPMENT**

Industrial Scientific Model MX 251 Gas Detector for LEL and O  
AIM Model 3350 Gas Detector for H<sub>2</sub>S  
PHOTOBAC "SNAP SHOT" PORTABLE GAS CHROMATOGRAPH for Benzene

## **LEL EXPLOSIVE VAPORS**

USING THE MX 251, MEASURE THE LOWER EXPLOSIVE LIMITS.  
READING MUST BE LESS THAN 10%

LEL = \_\_\_\_\_

## **H<sub>2</sub>S -HYDROGEN SULFIDE:**

USING THE AIM GAS DETECTOR, MEASURE THE CONCENTRATION OF H<sub>2</sub>S.

H<sub>2</sub>S = \_\_\_\_\_

## **BENZENE (TBX)**

USING THE "SNAP SHOT" GC, MEASURE OF THE CONCENTRATION OF BENZENE. READING MUST BE LESS THAN 1 ppm.

BENZENE = \_\_\_\_\_

# IN-SITU BURN BOOM OPERATIONS PROCEDURES

## PRE-IGNITION CHECKLIST

### COMMUNICATIONS OFFICER WILL:

- ☐ Perform radio check with each vessel and participating trustee.
- ☐ Verify each vessel is aware of burn trajectory and time of ignition.

### BURN SUPERVISOR WILL:

- ☐ Verify clear burn path from aircraft.
- ☐ Ensure boats and booms are pointed upwind.
- ☐ Designate oil-free safe area for vessels in case of emergency.
- ☐ Obtain final burn approval from FOSC.

## BOOM TOWING SAFETY INSTRUCTIONS

1. Contained oil should be ignited only after the requirements for Tab d to Annex X of the In-Situ Burn L.O.A. and pre-ignition and operational checklist are met, and confirmed by all key participants via radio link.
2. All vessels must remain at least (5) fire diameters from the flame perimeter.
3. When using six hundred and sixty feet (660 ft.) or less of boom, use tow lines equal to the length of the boom. For boom longer than six hundred and sixty feet, tow lines may be less than the length of the boom.
4. Prior to ignition, ensure that all personnel on-site are positioned upwind or cross-wind from the target slick.
5. Prior to ignition, ensure that all personnel on-site are positioned upwind or cross-wind from the target slick.

## FIRE CONTROL

BURN SUPERVISOR WILL BE POSITIONED ON THE COMMAND VESSEL.

HE/SHE WILL:

- ☐ Control the burn rate by coordinating boom towing vessels' forward velocity.  
(Burn rate is dependent upon oil layer thickness)

# IN-SITU BURN BOOM OPERATIONS PROCEDURES

## BURN EFFECTIVENESS MONITORING

**SITE SAFETY OFFICER WILL BE POSITIONED ABOARD A DEDICATED SAFETY VESSEL. HE WILL:**

- ☐ Assist the command vessel with monitoring the burn's effectiveness
- ☐ Monitor the status of the burn in relation to the proximity of the burn to towing vessels and other response vessels.
- ☐ Monitor and maintain pre-designated "fire-free" zones between response vessels or between the burn and specified sensitive areas.
- ☐ Provide backup support for deployment and containment operations.
- ☐ Provide extra personnel and equipment, where needed.

## TERMINATION OF BURN AND EMERGENCY TERMINATION OF BURN

In most circumstances, the FOSC should plan to allow an oil slick to burn to completion once it has ignited. However, premature termination of a burn may be necessary if the wind or weather shifts unexpectedly, or if secondary ignition of another slick is a possibility.

As part of the **GO/NO-GO POLICY**, the Burn Supervisor, Site Safety Officer, participating Trustees or designated safety personnel may stop the response effort by declaring an emergency.

**If an emergency is declared, the person declaring the emergency will:**

- ☐ Provide description of the problem to the Burn Supervisor and FOSC.

**FOSC will determine the course of action.**

**If the burn is terminated, Burn Supervisor will:**

### PRIMARY METHOD

- ☐ Order one of the towing vessels to release the tow line from the vessel
- ☐ Order the other towing vessel to move ahead at several knots. (Oil will spread Out quickly to a thickness that cannot support combustion.)

### SECONDARY METHOD

- ☐ Order both vessels to move ahead at several knots. (Oil will be forced beneath the boom, removing it from the combustion zone.)

APPENDIX – VI OF ISB LOA  
RESOLUTION OF QUESTIONS RE ISB LOA  
RRT, REGION IX-MAINLAND

This information was agreed upon in an RRT Meeting in Novato, CA October 30-31, 1996; and the details are to accompany the LOA.

(1) Geographical Boundaries (Page Two of the LOA). Designation of area covered by the Letter of Agreement: 35-200 nautical miles from the Mainland Coast of California. This does not mean 35 nm from the shoreline of islands. It will be up to the FOSC to determine whether there is any unprotected human population on an island, which may be within this zone. If there were to be such a person (s), then monitoring would need to be done to assure that the limits were not exceeded.

(2) There have been no specific comments from NOAA or DOD regarding any additional specifics for land within their jurisdictions. It will be assumed that for any geographical entity within the zone covered by the LOA, the judgment of the FOSC and the restrictions itemized in the LOA will be sufficient protection for these geographical entities.

(3) Appendices II-V are still given as examples of the type of document which should be developed if an in situ burn were to be done. The RRT signatory agencies do not expect to see such a document in advance of the burn, but they do expect that the pertinent information would be developed, that the FOSC or his designee would review it, and that the FOSC report would contain all the pertinent information.

(4) A statement will be added to the LOA that it will be reviewed annually and updated  
as appropriate.

(5) Specific comments were received from the US Coast Guard-Strike Force Coordination Center (marked “\*\*”). RRT response follows (marked “\*\*”).

\* 1. "Guidelines paragraph 2 note conditions that allow the FOSC to conduct a burn without concurrence from other Federal officials, yet this appears to be contradicted by the go/no-go discussion in Appendix IV."

\*\*Appendix IV is an example of a Site Safety Plan. It is assumed that the FOSC will approve all aspects of the operation of the ISB. The go/no-go decision would be up to the FOSC and the details of an approved ISB operation would be the subject of an aftermath report (the FOSC Report), which will be made available to the RRT.

\*2. "Guidelines paragraph 4 indicate wind patterns will be predicted by the NOAA SSC. The National Weather Service or military weather personnel may also be useful and provide added flexibility in this ... regard. "

\*\*True. The NOAA SSC works for the FOSC and gathers necessary information from a number of sources. These are useful suggestions.

\*3. "Guidelines paragraph 5 indicates the existence of protocol for observing and halting the burn in Appendix III, however Appendix III ... does not have sufficient monitoring detail and does not appear to be based on the Special Response Operations Monitoring Program. The monitoring paragraph of the Documentation, Monitoring and Evaluation Section also refers to Appendix III for monitoring details that are not there. Also, in one of these sections there should be some clarification as to who is monitoring for what. The USCG may be doing effectiveness monitoring and others may be interested in effects monitoring."

**\*\*True.** The entire operation is under the purview of the FOSC. Individual monitoring activities, pertinent to the specific ISB situation would be described in the Monitoring Plan, which would be drawn up specifically for the ISB being undertaken. Appendix III in this LOA is an example developed by Oceania RRT participants. The case-specific information and Plans would be available after the ISB, for RRT review in the FOSC Report.

\*4. "Guidelines paragraph 8 should be more specific as to what are trained professionals and recognized techniques/technologies."

**\*\*This is left initially to the judgment of the FOSC.** The RRT can review the specifics in the FOSC Report and determine whether more clarification should be given in advance. If the decision were to give more clarification, then this guidance would be part of the update of the LOA.

\*5. "Guidelines paragraph 9 should be more specific as to what is necessary for rapid controlling and stopping of the burn."

**\*\*This is left initially to the judgment of the FOSC.**

\*6. "Appendix I, Overview, Safety Concerns, Vessel Safety Section should address the use of safety zones and broadcast notice to mariners as a means to increase overall vessel safety

**\*\*These operational concerns are left up to the FOSC.**

\*7. "Appendix I, Overview, Safety Concerns, the entire section should be cross-checked against the hazards listed in Appendix IV to ensure all are appropriately discussed (e.g. H<sub>2</sub>S discussed in Appendix IV but not in Appendix I; Polynuclear Aromatic Hydrocarbons discussed in Appendix I but not in Appendix IV)."

**\*\*Human Health & Toxicity Concerns Section of Appendix I contains some general language which includes these noted compounds - "chemical content of the smoke plume is one reference, and "sulfur dioxide ... produced by oil combustion" is another. Appendix I is meant as a broad overview of the risks and the tradeoffs; specific details are found in the Safety and Monitoring Appendices, which would be developed, in a specific ISB application, conducted under the overview of the FOSC.**

\*8 " Appendix II, In-situ Burning Plan, the following details should be added: (1) People and equipment resources to conduct the burn; (2) Command and control issues; (3) Communications; (4) Backup mechanical containment and recovery measures."

**\*\*These operational details would be developed in a case-specific plan for the ISB actions which the FOSC overviews.**

\*9. Appendix II, recommend "Weather & Water 24 Hour Forecast" section be reworded to

"Marine Weather 24 Hour Forecast."

**\*\*OK - since Appendix II is an example, the changed language can be part of the example.**

\*10. "Appendix II, "Estimated Smoke Trajectory: With all the computer models capable of predicting plume behavior available, recommend one or more be used and referenced in the Plan."

**\*\*OK - this would be up to the FOSC, and the NOAA SSC would most likely be using these as part of the NOAA-provided support.**

\*11. "Appendix IV appears to be a good, comprehensive site safety and health plan that has significantly more detail than the Burning Plan and the Burn Monitoring Plan. Normally these two plans would generate the concerns that drive the site safety plan. Recommend that the site safety plan be used to work backwards and flesh out the Burning and Burn Monitoring Plans. Recommend the drafters of this document contact the NRT S&T subcommittee to achieve standardization and common benefit from these two development efforts."

\*\*Noted. These appendices are examples only.

\*12. A number of specific comments were made by the USCG reviewer on improvements to the Site Safety and Health Plan. These are listed without comment, since this Appendix is given as an example of a site safety plan, which would be developed for each specific ISB application.

Use term "personal Flotation Device: in lieu of "USCG Life Vest" in PPE Requirements section;

Add OSHA PEL (TWA) for Benzene (1 ppm) in Exposure Limits section;

List/explain PAH hazards in Exposure Potential section (as mentioned in Appendix I Overview);

Use term "explosive/flammable gases" vs. "LEL" as the Exposure Potential (since LEL is the exposure limit for those hazards);

Exposure Limit for "explosive/flammable" gases should be written as "less than 10% of the LEL";

Add "reading must be less than 10 ppm" under H2S monitoring section;

Plan Approvals Section, wrong use of "IT'S", delete word, and add "representative: following the agency (not under the blank itself), recommend use the term "Federal On-Scene Coordinator (FOSC)" here (as mentioned in Purpose section of LOA);

What does "E/S Ent. Permit" mean under Health & PPE Requirements section (confined space entry permit?). need to clarify/re-word-,

Why are PPE requirements repeated in two sections of the plan (in Health & PPE Requirements section and in PPE section, which also adds more detail on APR cartridges, which is important); recommend just list overall "Safety & Health Concerns" in the matrix listing "PPE" as one concern and referencing the later more detailed section on PPE, which should also include INFO on glove/boot/splash suit materials suitable for oil spill contaminants."

(10) Comments were received from the USCG-SECTOR San Diego and are marked "(\*)". RRT reply is marked "(\*)".

\*1. Appears that the 35-200 mile pre-approved zone needs further discussion. What is the Boundary for islands within the 35-200 mile zone. In the San Diego AOR the greatest potential for a significant offshore discharge is in the "gasoline alley" where the Navy does unrep, and in the Chevron Lightering zone. Both are within 35 miles of San Clemente Is."

\*\*The pre-approval zone is 35-200 nautical miles off the mainland coast of California. It would appear that the pre-approval zone would include these risk areas. The FOSC would need to assure that the unprotected human population exposure limits were not exceeded.

\*2. "It appears there would never be a time when the 3 criteria would not be met in the 35-200 zone barring any islands. Are these three criteria really established for determinations when within 35 miles or close to islands?"

\*\*The proximity to islands issue was discussed previously. The three criteria are: (1) ISB is a viable option for oil removal; and (2) exposure limits for unprotected human population will not be exceeded; and (3) the plume or heat from the burn will not result in greater impact to sensitive wildlife resources than would the spilled oil. There might be instances in which any or all of these criteria could not be met, and then the ISB would not be pre-approved. For example, there might be other vessels in the area, with unprotected human populations, which might be exposed to the plume. Another example - the oil might not be burnable or weather conditions might not be appropriate, or the available equipment might be lacking in order to effect a safe burn operation.

\*3. "We are assuming that "population" excludes response personnel, other vessels, and aircraft for the purpose of evaluating the particulates downwind. If so we will probably never have to make the calculation. If we have to make the calculation as stated in the LOA, we lack the tool to do that."

\*\*If the calculation being discussed is the measurement for particulates, then it is important that the FOSC or his designee work with NOAA to develop the protocol for monitoring and then assure that within the Incident Command System (ICS) there is a way for this monitoring to be done - either through contract or through one of the units of the ICS (the Pacific Strike Team of the USCG might be one possibility). The test is to monitor for particulates of a stated size and concentration at the breathing zone of potentially affected humans.

(11) Comments were received from MMS, marked "\*\*", and RRT reply is marked "\*\*\*".

\*1. "Page 1, paragraph 4 - Language in the text should specify where monitoring of the smoke plume should take place to prevent exposure to the plume. We suggest following the Newfoundland Oil Burn Experiment Protocols to prevent exposure. We also suggest the use of smoke plume air models such as the one developed by the National Institute of Standards and Technology to predict the direction the smoke plume will travel."

\*\* It is not clear to which section this comment may pertain, since there is no paragraph 4 on page 1. However the thoughts may be useful suggestions to those preparing case-specific plans.

\*2. "Appendix I, page 2. "Safety Concerns", 3. Vessel Safety:. We suggest including language regarding vessels which may be used to apply additives (Enhanced Burn Additives, emulsion breakers, etc.) to the contained oil slick prior to and possibly during the burn."

\*\*This is an operational suggestion, which will be noted for the use of those preparing case-specific plans. Appendix I is meant to be a narrative summary of ISB as an oil spill response tool. This same comment applies to further statements about Appendix I.

\*3. "Appendix I, page 2, "Safety Concerns" 3. Vessel Safety. We suggest adding language regarding the access of boat traffic, turning radius restrictions and the downwind restricted zones due to the VOSS and ROGs generated by the burning of a large oil slick."

\*4. "Appendix I, page 2, "Safety Concerns: This section does not mention the measures to be taken in case of crude oils containing H<sub>2</sub>S, speed of the oil/gas separation, flammability and toxicity (MMS requires 15 ppm H<sub>2</sub>S as the lower threshold of platform restriction/evacuation preparedness"

\*5. "Appendix I, page 2, "Safety Concerns". We suggest a sentence concerning SO<sub>x</sub> and H<sub>2</sub>S that explain the behavior and related hazards from their characteristics. We suggest mentioning the importance of using a spark arrestor.

\*6. "Appendix I, page 2, "Safety Concerns. The Section should include a paragraph regarding aircraft. It should specify the working ceiling for fixed wing and other aircraft for each work phase, i.e., mapping over flights, laser beam ignition, dispersant spraying, sample taking and aerial coordination of program phases (including wind monitoring and traffic coordination upwind and downwind)."

\*7. "Appendix I, page 2, item 5. Emulsification - Emulsification is very different from weathering. Evaporation of an oil's light ends and the onset of water-in-oil emulsion formation in an oil slick often signals the closing of the window of opportunity for in-situ burning as a countermeasure. Water content in excess of 25 percent in a stable emulsion generally precludes ignition of the slick Application of an emulsion breaker can significantly extend the window of opportunity for in-situ burning."

\*8. "Appendix I, page 3, second paragraph. Polynuclear Aromatic Hydrocarbons (PAH). We suggest to include and explain the fate of PCH also, because both PAH and PCH dilute rapidly as the smoke disperses."

\*\*There is a statement in this section, which observes that concentrations decline downwind.

\*9. "Appendix II, Weather and Water Conditions - We question the need to include tides in a burn plan for 35-200 miles offshore. Tides affect the nearshore environment."

\*\*This is true. Appendix II details are given as an example, which was developed for the Oceania RRT jurisdiction. We expect that an IN-SITU BURNING PLAN will be developed for each case-specific application and that the FOSC will approve it. The RRT will see the details, after the fact, when the FOSC Report is circulated

#### RRT Contact List

Name/Agency	Contact Number
A. Environmental Protection Agency	
EPA Alternate 1:	
Dan Meer	415-972-3132
Bill Robberson	415-972-3072
B. United States Coast Guard	
CAPT Swanson	510-437-5754
USCG Alternate 1:	
CDR Susan Krala	510-437-2794
C. Department of the Interior	
Pat Port	510-817-1477
	Cel: 510-420-0524
DOI Alternate:	
Regional Environmental Assistant (TBD)	



DOI Alternate:

Regional Biologist:

California Jim Hass

916-978-5603

D. Department of Commerce

NOAA

415-561-6624

206-499-1118

HAZMAT Duty Officer

206 526-6317

E. California Department of Fish and Game/OSPR

Mike Sowby

916-324-7629

916-323-0716

State Alternate 1:

Yvonne Addassi (in-situ burning)

916-324-7626

F. NOAA/HAZMAT

Scientific Support Coord.

206 526-6317

G. Office of Emergency Services

Trevor Anderson

916-845-8788

#### Local Air Pollution Control District Contact List

Mr. Wayne Morgan North Coast Unified AQMD 2300 Myrtle Avenue Eureka, California 95501-3328 (707) 443-3093 FAX (707) 443-3099	Mr. David Faulkner Mendocino County APCD Courthouse 306 East Gobbi Ukiah, California 95482 (707) 463-4354 FAX (707) 463-5707
Mr. James Guthrie Director of Enforcement Bay Area AQMD 939 Ellis Street San Francisco, California 94109 (415) 749-4979 FAX (415) 928-8560	Ms. Barbara Lee Northern Sonoma County APCD 109 North Street Healdsburg, California 95448 (707) 433-5911 FAX (707) 433-4823
Mr. Fred Thoits Monterey Bay Unified APCD 24580 Silver Cloud Court Monterey, California 93940 (408) 647-9411 FAX (408) 647-8501	Ms. Karen Brooks San Luis Obispo County APCD 3433 Roberto Ct. San Luis Obispo, California 93401-7148 (805) 781-5912 FAX (805) 781-1035
Mr. Ron Tan Santa Barbara County APCD 26 Castilian Drive, B-23 Goleta, California 93117 (805) 961-8800 FAX (805) 961-8801	Mr. Kent Field Ventura County APCD 669 County Square Drive Ventura, California 93003 (805) 662-6960 FAX (805) 645-1444
Mr. Mohsen Nazemi South Coast AQMD 21865 East Copley Drive Diamond Bar, California 91765 (909) 396-2662 FAX (909) 396-3341	Ms. Teresa Morris San Diego County APCD 9150 Chesapeake Drive San Diego, California 92123-1096 (619) 694-3342 FAX (619) 694-2730

#### References

1. ATSDR (Agency for Toxic Substances and Disease Registry). 1991. Preliminary health advisory related to burning oil wells in Kuwait. In-situ Burning Workshop. May 1991.
2. Campagna, P.R. & Humphrey, A. 1992. Air Sampling and Monitoring at the Kuwait Oil Well Fires. In Proceedings of the Fifteenth Arctic and Maine Oil Spill Program Technical Seminar. June 1992.
3. Evans, et al. Burning, Smoke Production, and Smoke Dispersion from Oil Spill Combustion, Proceedings of the Eleventh Arctic and Marine Oil Spill Technical Seminar, Vancouver, British Columbia, Canada. June 1988
4. Evans, D., et al. 1992. Smoke Plumes from In-Situ Burning of Oils. National Institute of Standards and Technology.
5. Ferek, et al. 1992. Chemical Composition of Emissions from the Kuwait Oil Fires. Journal of Geophysical Research; 97: 14483-14489.

6. Gonzalez, et al., 1994. Texas Marsh Burn Removing Oil from a Salt Marsh using In-Situ Burning. In-situ Burning Oil Spill Workshop, Florida.
7. National Research Council. 1989. Using Oil Spill Dispersants on the Sea. National Academy Press, Washington D.C. 335 pp.
8. S.L. Ross Environmental Research LTD. 1990. "Evaluation of Capabilities to Respond to Large Oil Spills in California Marine Waters". Prepared for the California State Interagency Oil Spill Committee.
9. Sharratt, M. and M. Butler. 1992. Toxicological effect of oil smoke. In The Environmental and Health Impact of the Kuwaiti Oil Fires, Proceedings of an International Symposium, October 1991.
10. Shigenaka, G. & N. Barnea. 1993. Questions about In-situ Burning as an Open-Water Oil Spill Response Technique. National Oceanic and Atmospheric Administration. HAZ-MAT Report 93-3; June 1993.

#### **3270.4 Types of Equipment Required**

### **3280 Bioremediation**

#### **3280.1 Background**

Bioremediation is a treatment technology that enhances existing biological processes to accelerate the decomposition of petroleum hydrocarbons and some hazardous wastes. Bioremediation has been used extensively in waste water treatment of spilled oil. The most extensive field research efforts have been the shoreline treatment studies in Alaska following the Valdez incident. This research suggested that shoreline treatment by nutrient enhancement significantly increased degradation rates of oil when compared to untreated shoreline areas. The benefits of bioremediation, however, have not been adequately demonstrated through field applications. Consequently, this technology should be considered more experimental than an accepted standard for clean up of oil spills. The promise of bioremediation providing increased rates of oil degradation with minimal input of human effort to cleanup the spilled oil is attractive. However, the technology is time consuming, unproved in open water environments, and probably best suited to the treatment of specific types of shorelines and marsh habitats. At present, bioremediation should be viewed as a polishing agent for the final stages of cleanup rather than as a primary response tool - especially considering the slow rates of reaction to degrade the oil.

### 3280.2 Regional Philosophy

The primary objective of oil spill abatement and cleanup is to reduce the effect of spilled oil on the environment. Physical removal is the preferred method. However, mechanical recovery may be limited by equipment capability, weather and sea conditions, and spill magnitude. In addition, efforts and equipment used for mechanical recovery may prove to be more destructive to the environment than the original contamination with oil. Based on the results of current research, and a general understanding of the principles of bioremediation, this technology should be used strictly as a shoreline remediation tool with a preference for nutrient enhancement without the introduction of indigenous and/or non-indigenous microbes.

### 3280.3 Guidelines

Section 300.910 of NCP authorizes the use of biological additives for the dispersion/abatement of oil spills. The product must be listed on the NCP Product Schedule and on the list of products licensed by the SWRCB for use in the State of California to be considered for use along the California coastline. The following guidelines consolidate existing Federal and State regulations and streamline the approval process.

#### (A) Decision Process

The OSC shall adhere to the following:

(1) Inland and shoreline areas: The OSC will obtain approval from the EPA and the California Department of Fish and Game (CDF&G) representing the State of California. The EPA and State representative to the RRT shall consult with the DOI and DOC natural resource trustee(s).

**Note:** In California, bioremediation products considered for use must be on California's list of approved products, or be incident specific approved by the State representative to the RRT.

(2) Documentation/Technical Assistance: EPA, affected states(s), DOI, and DOC will each have a representative available to coordinate data collection and interpretation and to consult with the OSC.

(3) Monitoring: The application process and results must be recorded visually. This can be accomplished using film or video footage made from the shore or from the air. Visual observations can also be made by a trained observer. Filming should be done without causing delay to the bioremediation application activity.

#### (B) Documentation

The Bioremediation Checklist (Figure 4000.E) will be used by the OSC and staff to permanently record the decision to use or not to use bioremediation for a specific incident. Each agency resource trustee representative will be the point of contact for his or her constituency; the SSC will be the point of contact for all not represented.

#### **3280.4 Checklist**

##### **SPILL DATA/INCIDENT INFORMATION**

CAUSE (SPECIFIC):

DATE/TIME:

LOCATION:

VOLUME AND TYPE OF RELEASE (Cont., Intermittent):

POTENTIAL VOLUME TO BE RELEASED:

CONFIDENCE IN DATA (high, medium, low):

##### **CHARACTERISTICS OF SPILLED OIL**

OIL TYPE/NAME:

SPECIFIC GRAVITY:

FLASH POINT:

POUR POINT:

VISCOSITY:

%AROMATICS:

%SATURATES:

%ASPHALTENES:

##### **WEATHER AND WATER CONDITIONS/FORECAST (48HR)**

WATER TEMP:

AIR TEMP:

CURRENT INFO:

WIND SPEED:

SALINITY:

WIND DIRECTION:

WATER DEPTH:

SEA STATE:

TIDE INFO:

COMMENTS:

BIOREMEDIATION CHECKLIST, PAGE 2.

HABITAT TYPE/AREA OF IMPACT:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_

## BIOREMEDIATION CHARACTERISTICS

	PRODUCT 1	PRODUCT 2	PRODUCT 3
NAME:	_____	_____	_____
MANUFACTURER:	_____	_____	_____
EPA LISTED:	_____	_____	_____
STATE LICENSED:	_____	_____	_____
STOCKPILE LOCATION:	_____	_____	_____
POINT OF CONTACT	_____	_____	_____
WHEN AVAILABLE:	_____	_____	_____
AMOUNT AVAILABLE	_____	_____	_____
AMOUNT NEEDED	_____	_____	_____
AMOUNT ON HAND	_____	_____	_____
TOXICITY:	_____	_____	_____
TYPE (CONCENTRATE/MIX)	_____	_____	_____
PHYSICAL REACTIVITY:	_____	_____	_____
APPLICABILITY ON OIL	_____	_____	_____
EFFICIENCY(% PROJECTED)	_____	_____	_____
APPLICATION MEANS:	_____	_____	_____
POSITIVE DOSAGE	_____	_____	_____
CONTROL	_____	_____	_____
DOSAGE RATE SETTINGS	_____	_____	_____
DOSAGE CHARTS	_____	_____	_____
AVAILABLE BIOREMEDIATION APPLICATION INFORMATION/EVALUATION:			
PROPOSED BIOREMEDIATION APPLICATION PLAN:			
BIOREMEDIATION APPLICATION INFORMATION (CONTINUED)			
EQUIPMENT PROPOSED FOR USE:			
RESPONDERS ADEQUATELY TRAINED:			
LOCATION OF AREA TO BE TREATED:			
SCHEDULE OF BIOREMEDIATION OPERATIONS:			
WHAT WILL THE WEATHER CONDITIONS BE AT THE TIME THE BIOREMEDIATION IS APPLIED:			
IS THE VEHICLE FOR APPLICATION EFFICIENT AND PROPER GIVEN THE			
CONDITIONS STATED ABOVE:			
ARE MONITORING SCHEMES IN PLACE OR READILY AVAILABLE:			

WITNESSES TO THE APPLICATION  
NAMES

DATE/TIME

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

PLATFORM USED:  
OBSERVATION:

VIDEO/PHOTO DOCUMENTATION RECORD

IN CHARGE: \_\_\_\_\_  
IN CUSTODY OF: \_\_\_\_\_  
CASSETTE(S) NUMBER: \_\_\_\_\_  
VIDEO EQUIPMENT TYPE: \_\_\_\_\_  
ROLL(S) NUMBER: \_\_\_\_\_  
CAMERA TYPE: \_\_\_\_\_



### **3300 Emergency Response**

Refer to Section 3003.01 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3310 SAR**

Refer to Section 3003.01.1 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

##### **3310.1 SAR Area Resources**

Refer to Section 3003.01.1 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3320 Salvage/Source Control**

Refer to Section 3003.01.2 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

##### **3320.1 Assessment and Survey**

Refer to Section 3003.01.2 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

##### **3320.2 Stabilization**

Refer to Section 3003.01.2 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

##### **3320.3 Specialized Salvage Operations**

Refer to Section 3003.01.2 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

##### **3320.4 Types of Equipment Required**

Refer to Section 3003.01.2 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

##### **3320.5 Salvage Guidelines**

Refer to Section 3003.01.2 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3330 Marine Fire Fighting**

Refer to Section 3003.01.3 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3340 Hazmat**

Refer to Section 3003.01.4 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3340.1 Initial Emergency Response Procedures**

Refer to Section 3003.01.4 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3340.2 Evacuation Procedures**

Refer to Section 3003.01.4 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3340.3 Hazmat POC's**

Refer to Section 3003.01.4 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3340.4 Types of Equipment Required**

Refer to Section 3003.01.4 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

## **3350 EMS**

Refer to Section 3003.01.5 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3350.1 Emergency Medical Services**

Refer to Section 3003.01.5 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

## **3360 Law Enforcement**

Refer to Section 3003.01.6 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3360.1 Perimeter/Crowd/Traffic/Beach Control**

Refer to Section 3003.01.6 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3360.2 Safety/Security Zones**

Refer to Section 3003.01.6 of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

## **3400 Air Ops**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1LANG.HTM) or contact Coast Guard Air Station Los Angeles at 310-215-2112

## **3410 Air Tactical**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1LANG.HTM) or contact Coast Guard Air Station Los Angeles at 310-215-2112

### **3410.1 Aerial Surveillance**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) or contact Coast Guard Air Station Los Angeles at 310-215-2112

### **3410.2 Aerial Dispersant Application**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) or contact Coast Guard Air Station Los Angeles at 310-215-2112

### **3410.3 Procedures for Temporary Flight Restrictions**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) or contact Coast Guard Air Station Los Angeles at 310-215-2112

### **3410.4 Permanent Area Restrictions**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) or contact Coast Guard Air Station Los Angeles at 310-215-2112

## **3420 Air Support**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) or contact Coast Guard Air Station Los Angeles at 310-215-2112

### **3420.1 Airports/Helibases**

Refer to Section 9800 of this Plan

### **3420.2 Helospots**

Refer to Section 9800 of this Plan

### **3420.3 List of Certified Helo's/Aircraft Providers**

Refer to the California Dispersant Plan [Appendix XII of the REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.htm)

### **3420.4 Fuel/Maintenance Sources**

Refer to Section 9800 of this Plan

### **3420.5 Air Traffic Control Procedures**

Refer to the [INCIDENT MANAGEMENT HANDBOOK \( HTTP://WWW.USCG.MIL/HQ/G-M/MOR/PAGE1LANG.HTM \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) or contact Coast Guard Air Station Los Angeles at 310-215-2112

## **3500 Staging Areas**

### **3510 Pre-Identified Staging Areas**

Refer to Section 9800 of this Plan

- (1) Staging areas for equipment: To a degree, the appropriate staging area is spill specific. However, there are considerations, which need to be applied each time an equipment staging site is selected. A preliminary list of these considerations follows and is not all inclusive:
  - (a) Accessibility (e.g. vehicles, trailers, boats, etc.);
  - (b) Proximity to spill;
  - (c) Proximity to a sensitive environmental site (California Department of Fish and Game - OSPR and trustees MUST be consulted);
  - (d) Potential temporary command post site and/or availability of existing facilities;
  - (e) Accessibility to power, phone lines, and water;
  - (f) Availability of site (i.e. is site privately owned, regulatory prohibitions, etc.);

### **3520 Security**

Refer to Section 5220.6 of this Plan

## **3600 Wildlife**

Following is an excerpt from the [Wildlife Response Plan for California \(Wildlife Plan\)](#). [Refer to RCP Apps\\_XXII\\_a\\_CAWildlifePlan for the complete version.](#) The Wildlife Plan appendices are included in the [RCP Appx\\_XXII\\_b\\_CAWildlifePlanAPPX.pdf](#) and in their entirety on the California Department of Fish and Game, Office of Spill Prevention and Response (OSPR) web site at [www.dfg.ca.gov/ospr/misc/wildlife.htm](http://www.dfg.ca.gov/ospr/misc/wildlife.htm)

Wildlife and habitats are put at risk or injured when oil is spilled into the marine environment. Both Federal and State statutes mandate protection, rescue and rehabilitation of oiled wildlife.

The Federal Spill Pollution Act of 1990 requires that a Fish and Wildlife and Sensitive Environments Plan be developed and include immediate and effective protection, rescue and rehabilitation of wildlife resources and habitat that are harmed by a spill.

The State of California's Lempert-Keene-Seastrand Oil Spill Prevention and Response Act requires:

- Development of contingency plans for the protection of fish and wildlife,
- Establishment of rescue and rehabilitation facilities,
- Establishment and funding of a network of rescue and rehabilitation facilities, known as the Oiled Wildlife Care Network,
- Assessment of injuries to natural resources from a spill,
- Development of restoration plans to compensate for adversely affected wildlife resources and habitats.

To address these statutory mandates, the Wildlife Plan has been developed by a group of federal and state agencies and other interested parties. The Wildlife Plan is

part of the RCP/ACP for California, a joint document of U.S. Coast Guard (USCG) and OSPR.

The Wildlife Plan details the Wildlife Operations Branch purposes, goals, objectives, responsibilities, and structure. The Wildlife Operations Branch is in the Operations Section of the Incident Command System (ICS) for oil spill response. The Wildlife Operations Branch structure needed in California and detailed in this plan is expanded beyond that described in the USCG [INCIDENT MANAGEMENT HANDBOOK \( http://www.uscg.mil/hq/g-m/mor/page1lang.htm \)](http://www.uscg.mil/hq/g-m/mor/page1lang.htm) at the Group level. As is always true with ICS, the structure may be expanded or contracted to fit the need, but the mission remains unchanged.

In California, the principal objectives of Wildlife Operations during a spill response are to:

- Protect wildlife and habitats from contamination,
- Minimize injuries to wildlife and habitats from the contamination,
- Minimize injuries to wildlife from the cleanup,
- Provide best achievable care for injured wildlife, and,
- Document adverse effects that result from the spill and cleanup.

To ensure these objectives are achieved with maximum efficiency, the Wildlife Branch Director coordinates and manages the activities of all personnel in the Wildlife Branch who fall under the authority of the Unified Command during spill response. These include federal, state, and local agencies along with commercial and non-profit organizations performing wildlife protection and management.

Within the Wildlife Operations Branch, there are four Groups who report to the Wildlife Branch Director:

- Wildlife Reconnaissance Group (aerial, ground, and on-water reconnaissance of wildlife in the spill area),
- Wildlife Hazing Group,
- Wildlife Recovery and Transportation Group (search and collection), and
- Wildlife Care and Processing Group (rehabilitation and logging in).

Even though Wildlife Operations is integrated into the ICS, it is self-directed in many ways and self-contained with regard to wildlife response resources (both staff and equipment). Wildlife Operations gathers much of its own spill information through wildlife reconnaissance, staffs its own Branch with pre-trained experts (e.g. veterinarians, rehabilitation staff, processing staff, capture experts, volunteers), and prepares its own sections of the Incident Action Plan for the Planning Section.

In this 2005 revision, the Wildlife Plan has been modified and expanded to ensure the statutory requirements of best achievable treatment, protection, and restoration of wildlife are met. This revision clarifies the organizational structure and details the required duties of the different positions within the Wildlife Operations Branch.

The Wildlife Plan has been written with the view that OSPR staff will usually assume the role of Wildlife Branch Director during a spill response. This is a natural

consequence of the pivotal position of the Department of Fish and Game, because the Department:

- Is the lead state trustee agency for California's fish and wildlife,
- Has permits and agreements with other agencies, to care for special status species and other protected wildlife
- Has legal mandates to protect wildlife, beyond OPA 90 and OSPR and,
- Has the needed expertise, training and experience

While the Wildlife Plan has been designed principally to cover oil spills in marine waters as required by Federal and State law, it is applicable to inland oil and non-oil spills as well. The organizational structure, roles and responsibilities remain the same, although some functions may be altered, as appropriate

### **3610 Fish and Wildlife Protection Options**

Refer to Appendix XXII of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3620 Recovery**

Refer to Appendix XXII of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3620.1 Wildlife Recovery Operations/Procedures**

Refer to Appendix XXII of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3620.2 Recovery Processing**

Refer to Appendix XXII of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3620.3 Carcass Retrieval and Processing**

Refer to Appendix XXII of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3630 Wildlife Rehab**

Refer to Appendix XXII of the [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3630.1 Wildlife Rehab Operations**

Refer to Appendix XXII of [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

#### **3630.2 Rehab Facilities**

Refer to Appendix XXII of [REGIONAL CONTINGENCY PLAN \( HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3630.3 Rehab Procedures**

Refer to Appendix XXII of [REGIONAL CONTINGENCY PLAN \( \[HTTP://WWW.USCG.MIL/D11/M/RRT9WEB/RCP.HTM\]\(http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM\) \)](http://www.uscg.mil/d11/m/rRT9WEB/RCP.HTM)

### **3640 Essential Fish Habitat**

Refer to the following Sections of this plan:

San Luis Obispo County – 9811.2

Santa Barbara County – 9812.2

Ventura County – 9813.2

Channel Islands – 9814.2

Los Angeles County – 9841.2

Orange County 9842.2

## **3700 Places of Safe Refuge**

### **3710 Places of Safe Refuge Decision-Making Process**

#### **3710.1 Incident-Specific Places of Refuge Decision-Making Process**

##### Step 1. Place of Refuge Requested.

The U.S. Coast Guard Captain of the Port (COTP) receives a request from a vessel master or his/her representative<sup>3</sup> to move a vessel to a place of refuge<sup>4</sup>. The COTP will request the following information from that individual:

The location of the place(s) of refuge (if a specific location is requested).

The reasons the vessel needs assistance and the specific assistance required.

A summary of medical and/or life safety issues associated with the incident, including the need to evacuate or quarantine individuals from the vessel.

The status of the vessel (e.g., steering, propulsion, firefighting capability).

If the vessel is flooding, status of the vessel's pumping system.

Types, quantities, hazards, and condition of petroleum products, hazardous substances, and/or other cargo onboard.

The presence (or suspected presence) of rats, other invasive species, or diseases onboard the vessel.

On-scene weather and water conditions and marine forecast.

Status of notifications completed by master (e.g., owners, operators, agents, Qualified Individual, class society).

##### Step 2. Immediate Action Required by COTP.

If the vessel's situation requires immediate action, leaving no time for consultation with the State On-Scene Coordinator, natural resource trustees, or other appropriate stakeholders, the COTP will:

Evaluate the options of the vessel remaining in the same position, continuing on its voyage, moving farther from shore, being scuttled in deep water, or moving to a place of refuge.

If evaluating a place of refuge, take into account, if possible, any potential places of refuge (PPOR) identified in the appropriate Sub area Contingency Plan (see PPOR Section H).

*[NOTE: Selection of a place of refuge without incident-specific consultation with the State On-Scene Coordinator, natural resource trustees, and other appropriate stakeholders may result in a decision based on incorrect and/or incomplete information.]*

In the event there are no individuals on board the vessel authorized to make the request, or the vessel has been abandoned, the COTP will be responsible (to the extent possible) for obtaining appropriate information requested in Step 1.

It is possible that the requestor will ask the COTP to identify a suitable place of refuge.

Permit or direct the vessel to stay in place, continue on its voyage, move farther from shore, intentionally ground, move to a place of refuge, or oversee scuttling the vessel in deep water.

Inform the State On-Scene Coordinator, natural resource trustees, and other appropriate stakeholders of the decision.

Activate, if necessary, a Unified Command to address any remaining issues.

### Step 3. COTP/Unified Command Evaluates Vessel Options.

If the vessel's situation does not require immediate action, the COTP will:

Activate a Unified Command, if appropriate.

Require, if appropriate, the vessel master or owner/operator to contract with a salvor and/or pollution response contractor.

Dispatch, if safety considerations and time allows, an inspection team (i.e., the "Away Team") to board the vessel and evaluate the vessel's condition.

Determine whether security partners should be notified, and if so, perform appropriate notifications.

Review the appropriate Sub area Contingency Plan (see PPOR Section H) to determine whether potential places of refuge have been identified and if any may be appropriate for this incident.

Contact the NOAA Scientific Support Coordinator to request the following information, as appropriate, for the option of the vessel staying in place, continuing its voyage, moving farther from shore, scuttling in deep water, or moving to a place of refuge:

Weather and sea states, including prevailing winds.

Tides and currents.

Seasonal considerations.



Potential temporary grounding locations (if intentional temporary grounding is an option).

Trajectories for products already or potentially discharged or released from the vessel.

Contact Federal and State natural resource trustees (see Appendix 2) to:

Request input on resources at risk for the options of the vessel remaining in the same position, continuing on its voyage, moving to another location farther from shore, being intentionally scuttled in deep water, or moving to a place of refuge.

Contact appropriate Federal, State, and/or local safety and public health agency representatives to:

Request input on human health and/or safety issues related to individuals still onboard, individuals responding to the incident, and to the general public for the options of the vessel remaining in the same position, continuing on its voyage, moving to another location farther from shore, being intentionally scuttled in deep water, or moving to a place of refuge.

Contact other appropriate stakeholders (see Appendix 2) as time allows to:

Request input on other stakeholder interests at risk for the options of the vessel remaining in the same position, continuing on its voyage, moving to another location farther from shore, being intentionally scuttled in deep water, or moving to a place of refuge.

Contact vessel master, vessel owner, and salvage experts to request input on the following information, as appropriate:

The status/seaworthiness of the vessel, in particular buoyancy, stability, availability of propulsion and power generation, docking ability, and progressive deterioration.

The impending threat to the vessel or its product.

Availability of rescue tugs/tow vessels of sufficient size and power to aid the vessel in distress, including towing.

Contact appropriate oil spill response organization(s) (OSRO) to provide input on:

Ability and/or feasibility to respond to discharges/releases from the vessel.

#### Step 4. COTP/Unified Command selects vessel option.

Based on the input received in Step 3, the COTP/Unified Command will evaluate the following to determine whether the vessel should proceed (or be taken to) to a place of refuge (which would be identified in Step 8), whether it should remain in place, proceed on its voyage, be intentionally scuttled in deep water, or move farther from shore:

##### Vessel Status and Risk Considerations

The kind and size of the vessel.

The status/seaworthiness of the vessel, in particular buoyancy, stability, availability of propulsion and power generation, docking ability, and progressive deterioration.

Types, quantities, hazards, and condition of petroleum products, hazardous substances, and/or other cargo onboard.

The presence (or suspected presence) rats, other invasive species, or diseases onboard the vessel.

The impending threat to the vessel or its product.

Weather conditions and forecasts.

Master's ability to navigate the vessel or need for a pilot.

Health of crewmembers and vessel passengers, including the ability to isolate and control the movement of passengers, crew, and airborne infection to populated areas.

Vessel traffic in the area.

Ability of vessel to move from its current location, and estimated distance it could transit without further incident.

#### Response and Salvage Resources Considerations

Availability of rescue tugs/tow vessels of sufficient size and power to aid the vessel in distress, including towing.

Salvage and spill response resources on-scene with the vessel and available during transit.

Vessel traffic in the area.

Access to pier or dock with repair facilities.

#### Human Health and Safety Considerations

Safety of individuals still onboard the vessel, if any.

Safety of individuals performing salvage/response activities.

Public health and safety.

#### Natural Resources Considerations

Sensitive resources (e.g., migratory birds, marine mammals, fish, threatened or endangered species, or historic properties).

Sensitive areas (e.g., designated essential or critical habitat, eel grass beds, marshes, parks, and refuges).

Others, as identified by Federal and State natural resource trustees.

#### Other Stakeholders Considerations

*To be identified by stakeholders* (examples include: subsistence use areas, mariculture sites, private lands, Native allotments, or commercial fishery areas).

#### Other Command Management Considerations

Liability, insurance, and compensation issues and limits.

Requirements of port or harbor authorities for financial responsibility and bonding.

Media and public interest.

Step 5. COTP/Unified Command evaluates potential places of refuge based on operational criteria.

If the COTP/Unified Command determines that the risks of moving the vessel to a place of refuge are acceptable, the COTP/Unified Command will request the following information to help identify one or more potential place of refuge locations.

Request from the NOAA Scientific Support Coordinator, the following information, as appropriate:

Weather and sea state including prevailing winds.

Tides and currents.

Seasonal considerations, such as ice.

Trajectories for products already or potentially discharged/released from the vessel.

Request from appropriate Alaska Pilots Association or other mariners, the following port or anchorage criteria:

The type and size of the vessel and required “swing room” relative to the size of the place of refuge site.

Adequate water depth at mean low tide to accommodate the vessel.

Navigational approach, including vessel traffic and associated risks.

Pilotage requirements.

Anchoring depth and ground, or suitable docking facilities.

Availability of repair facilities.

Availability of cargo reception and storage facilities.

Land and/or air access.

Availability of required emergency response capabilities (e.g., firefighting, pollution prevention, or law enforcement).

If appropriate, the following temporary grounding site criteria:

Depth of water, not covering vessel deck.

Type of shore bottom.

Navigational approach and pilotage requirements.

Exposure of site to ocean waves/currents.

Land and/or air access.

Contact appropriate salvage experts (may include USCG and vessel salvage representative) to request the following information, as appropriate, for all options being considered:

Any new information on the status/seaworthiness of the vessel, in particular buoyancy, stability, availability of propulsion and power generation, docking ability, and progressive deterioration.

Any new information on the impending threat to the vessel or its product.

Availability of rescue tugs/tow vessels of sufficient size and power to aid the vessel in distress, including towing.

Available salvage and spill response resources.

Availability of appropriate and compatible lightering equipment and receiving vessels.

Availability of product storage (e.g., tanker barge, other vessels).

Availability of skilled labor and trained personnel.

Access to repair equipment and facilities.

Availability of cargo reception and storage facilities.

Salvage and response vessel access.

Contact appropriate oil spill response organization(s) OSRO, if appropriate, to request:

Ability and/or feasibility to respond to discharges/releases from the vessel.

Contact port or harbor authorities and/or landowners and land managers to request information on:

Permits or other requirements.

#### Step 6. COTP/Unified Command selects potential places of refuge based on operational criteria.

Based on input received in Step 5, the COTP/Unified Command will select one or more potential places of refuge based on the following considerations:

##### Port or Anchorage Area Criteria

The type and size of the vessel compared to the size of the place of refuge site.

Adequate water depth at mean low tide to accommodate the vessel.

Navigational approach, including vessel traffic and associated risks.

Pilotage requirements.

Tides and currents.

Seasonal conditions, such as ice.

Anchoring depth and ground, or suitable docking facilities.

Availability of repair facilities.

Availability of cargo reception and storage facilities.  
Land and/or air access.  
Weather and sea state including prevailing winds.  
Requirements from port authorities, area landowners/managers.  
Availability of necessary emergency response capabilities (e.g., fire fighting, pollution response, and law enforcement).  
Temporary Grounding Site Criteria, if appropriate  
Depth of water, not covering vessel deck.  
Type of shore bottom.  
Navigational approach and pilotage requirements.  
Seasonal conditions, such as ice.  
Exposure of site to ocean waves/currents.  
Land and/or air access.  
Response, Salvage, and Repair Resources  
Available salvage and spill response resources.  
Salvage and response vessel access to the place of refuge.  
Availability of appropriate and compatible lightering equipment and receiving vessels.  
Availability of product storage (e.g., tanker barge, other vessels).  
Availability of skilled labor and trained personnel.  
Access to repair equipment and facilities.  
Availability of cargo reception and storage facilities.  
Other Command Management Factors  
Liability, insurance, and compensation issues and limits.  
Requirements of port or harbor authorities for financial responsibility and bonding.  
Required notifications such as marine pilots, if applicable.  
Public expectations and media outreach.

Step 7. Stakeholders provided with places of refuge options.

The COTP/Unified Command will provide the following information to natural resource trustees and other appropriate stakeholders:

The list of potential places of refuge.

Principal reasons for selecting each location (e.g., the vessel cannot travel far without sinking; or location of repair facilities).

How the vessel will transit to the area (e.g., on its own power or pulled by a tug).

Amount, location, and type of petroleum products and/or other hazardous substances remaining on the vessel; the likelihood of discharge/release; and, the anticipated trajectory for any products released.

The presence (or suspected presence) rats, other invasive species, or diseases onboard the vessel.

What incident-related activities will occur in the place of refuge (e.g., underwater welding)?

What support vessels/aircraft will be required (e.g., salvage vessel)?

The estimated duration the vessel will be in that location.

Anticipated weather and sea states (including prevailing winds), tides and currents, and seasonal considerations relevant to places of refuge options.

#### Step 8. Stakeholders provide ranking of potential places of refuge options.

The COTP/Unified Command will request that natural resource trustees and other appropriate stakeholder groups:

Review the information provided to them in Step 7.

When possible, provide the COTP/Unified Command with a consensus ranking of the potential places of refuge; including any identified special considerations or constraints and any permits or other authorizations required.

As appropriate, provide the COPT/Unified Command with documentation of considerations taken into account when arriving at a consensus position.

#### Step 9. Place of Refuge Selected.

Based on input received in Step 8, the COTP/Unified Command will:

Permit or direct the vessel to move to a place of refuge.

Inform appropriate stakeholders of the decision and of any additional response-related assistance required.

Continue overseeing or directing, as appropriate, response activities until the case is closed.

#### Step 10. The COTP/Unified Command prepares documentation of the decision.

### **3710.2 Identification of Potential Stakeholders:**

This list identifies potential stakeholder groups throughout California. Before using this list for incident-specific places of refuge decision-making, check the appropriate Area Contingency Plan to determine whether specific stakeholders have been identified for a potential place of refuge. If so, use the specific list developed for that potential place of refuge. If not, use the list below as a guide for which stakeholder groups to consult.

Situation where full consultation is not possible:

When a vessel's situation allows time for consultation with some, but not all stakeholders, at a minimum, the COTP/Unified Command should contact:

State On-Scene Coordinator

Federal and State natural resource trustees

Federal and State safety and public health agencies (if there is a risk to public safety and/or health)

As time allows, the COTP/Unified Command should also consult with federally recognized tribes, and other appropriate potentially affected stakeholders identified below.

List of Potential Stakeholder Groups:

Federal natural resource trustees

State natural resource trustees

Federal, State, and local safety and public health agencies

Federally-recognized tribes

Land Owners:

Local (e.g., county/municipal) governments

Private land owners (e.g., Native corporations)

Others

Other Stakeholders

Area Committee/Port Safety committees and law enforcement partners

Commercial operators

Port authorities

### **3710.3 Process for Identification of Geographic-Specific Potential Places of Refuges within Region 9 Area Contingency Plans**

#### **Purpose**

This appendix provides a framework for developing information on specific potential places of refuge in California. Following this framework will ensure that the process for developing the information and resulting documents is consistent with both the RRT9 *Guidelines for Places of Refuge Decision-Making* and all Region 9 Area Contingency Plans.

#### **Document Development**

Steps necessary to develop information for specific potential places of refuge include the following:

Establish an ACP Places of Refuge Workgroup (Workgroup) of interested and knowledgeable stakeholders.

*At a minimum, the Workgroup will include representatives from the U.S. Coast Guard, appropriate Federal (e.g., Department of the Interior, Department of Commerce, and/or Department of Agriculture), and State (e.g., California OSPR and California State Lands Commission) and natural resource trustees. In addition, federally recognized tribes and other interested stakeholders (e.g., safety and public health agencies) will be invited to participate in the Workgroup.*

Ensure the process is consistent with the RRT9 *Guidelines for Places of Refuge Decision-Making*.

Identify type(s) of vessel (e.g., oil tankers) likely to be in need of a Place of Refuge.

Determine environmentally and culturally sensitive areas at risk within the area.

Identify candidate potential places of refuge and document how they meet specified criteria.

Prepare potential places of refuge chart/table sheets for each site.

Arrive at consensus among Workgroup members on the draft section.

Submit the draft section to the respective Area Committee for review and approval.

Include the document in the Potential Places of Refuge Section of the appropriate ACP following public review.

#### **Document Contents:**

Purpose and scope—this narrative introduces the topic and describes how the document supports the RRT9 *Guidelines for Places of Refuge Decision-Making*.

How to Use the Potential Places of Refuge—this narrative briefly describes how potential places of refuge information is used in the RRT9 *Guidelines for Places of Refuge Decision-Making*.



How the Document was developed—this narrative outlines the process used to identify the potential places of refuge and create the supplement and identifies who participated in the process.

Potential Places of Refuge Chart/Table Sheets—pre-identified potential places of refuge will be identified on an area index map. Specific information on each place of refuge will be documented on a one-page (two-sided) sheet containing the following:

Side one: One or more color navigation charts of the candidate sites in the immediate vicinity showing approaches, anchorages, moorings, docks/piers, potential grounding sites, and existing geographic response strategies; a color aerial photograph of the location; and a chart legend.

Side two: Tables of information about each of the sites describing physical and operational characteristics of the sites (i.e., maximum vessel size, navigational approach, minimum water depths, maximum water depths, maximum vessel draft, swing room/dock face, bottom type, docks/piers, moorings, anchorages, firefighting anchorages, potential grounding sites, prevailing winds, currents, tides, sea conditions, shelter from severe storms and fog.); a list of stakeholders for the site; and other site considerations (i.e., health and safety, natural resources, response, and other considerations).

**3800 Reserved**

**3900 Reserved for Area/District**

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